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EXCELLENCE IN TEACHING ACT

HEARING

OF THE

COMMITTEE ON LABOR AND HUMAN RESOURCES UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

S. 1675

TO PROVIDE FINANCIAL ASSISTANCE FOR TEACHER RECRUITMENT AND TRAINING, AND FOR OTHER PURPOSES

S. 1676

TO STRENGTHEN THE TEACHING PROFESSION, AND FOR OTHER PURPOSES

OCTOBER 31, 1989

Printed for the use of the Committee on Labor and Human Resources

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EXCELLENCE IN TEACHING ACT

TUESDAY, OCTOBER 31, 1989

U.S. SENATE,
COMMITTEE ON LABOR AND HUMAN RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 10:10 a.m., in room SD-430, Dirksen Senate Office Building, Senator Edward M. Kennedy (chairman of the committee) presiding.

Present: Senators Kennedy, Cochran, Jeffords, and Kassebaum.

OPENING STATEMENT OF SENATOR KENNEDY

The CHAIRMAN. We will come to order.

Teaching today is a profession in crisis. Teachers are faced with one of the most important, most difficult, and most thankless jobs in the Nation. They are the front line in the battle where America's future may well be determined—in the education of the next generation of Americans.

Often today, in addition to their responsibilities as educators, teachers must also respond to the outside world that students bring into the classroom—crime in their neighborhoods, drugs in their hallways, the abuse and neglect in their homes.

In spite of these responsibilities, teachers endure unacceptably low salaries and low status, and the results are hardly surprising. It is becoming harder to recruit teachers and harder to retain them.

There are 2.3 million public school teachers in grades K through 12 in the United States. The Department of Education estimated that over the next decade, we must hire 1.6 million new teachers, or an average of 160,000 teachers a year. Yet our primary source of new teachers, college students majoring in education, has fallen 55 percent since 1972. Today, we are graduating only about half the teachers we will need to fill the gap in the years to come.

This problem is particularly acute in the inner city schools. In urban districts, teacher shortages are four times as great as in nonurban areas, and urban districts are twice as likely to have to hire a teacher not certified in the subject they are to teach as a nonmetropolitan area. This chart over here indicates the shortages in central cities are 2½ times higher than in the noncentral cities. And then the next graph, the one that is closest to me, shows the numbers of uncertified teachers is liable to be twice as high in the central cities as in the noncentral cities.

In math and science, we are facing a serious crisis. These are the fields which we need in order to compete, and yet we are losing 13

teachers for each one that is entering the profession. Eighteen thousand left in 1982–83. We are now graduating 1,300 a year—the number of new teachers needed in math and science is 300,000.

We need to increase the attractiveness of the profession to young people, as well as look to other sources for potential teachers. Retaining those who do enter teaching is also a problem. Twenty percent of the new teachers quit during their first year of teaching. More than half leave before the sixth year.

The purpose of this hearing today is to get an overview of the state of the teaching profession. We will hear this morning from leading experts in the field about the grim facts on the increasing shortage of qualified teachers, the changing demographics of the classroom, and the pressing need to revise academic curriculums to prepare students for a competitive work force. In addition, we will hear personal stories from talented individuals in a diverse range of fields: law, theater, and literature. They have stories to tell us about special teachers in their lives.

The Federal Government has a greater role to play in this area, and it has been neglected for too long. We can do more to attract people into the teaching profession. We can provide incentives for new teachers. We can provide training to help teachers meet the challenges that await them in the classroom. We can encourage teachers to continue their own education. We can provide greater recognition to teachers at the top of their profession.

Senator Pell and I have introduced two bills to enhance teacher recruitment, training and professional development, and additional measures have been proposed by a number of other Senators.

As we develop these initiatives, we will have additional hearings to explore the specific provisions of these bills. Today we will consider general themes which we all recognize as vital components of any legislation in this area: the need to recruit minority teachers, and teachers qualified in math and science, the need to focus on shortages of the inner cities and in the special areas of need, such as students with limited proficiency in English, the disabled, and preschool children.

We must set adequate goals to enhance the quality of teaching in America, and we must work harder to meet them.

Senator Cochran.

Opening Statement of Senator Cochran

Senator Cochran. Mr. Chairman, let me thank you for calling this hearing and give us a chance to look at the problem of availability and qualification of teachers throughout the country. I think as a matter of policy the Federal Government has an important role to play in this effort to do something constructive about the shortage of teachers, the availability of qualified persons to operate and run our classrooms throughout the country. And I am cosponsoring S. 1676 with the Chairman and Chairman Pell of our Education Subcommittee. I am not sure this is the total answer, but it is an indication of concern and the willingness to try to work with State and local Governments to do something constructive about the problem.

Some of the findings that we make in this bill as it is introduced is that we will need 200,000 new teachers by the year 1993. We need minority teachers. This is a great need, as reflected in the legislation that we have introduced. Interestingly enough we find that in 1981 fewer than 50 percent of the newly hired teachers in math and science were certified or eligible for certification in math and science. So there are some very serious problems that we face.

I am looking forward to hearing the testimony of the witnesses who are scheduled to appear before us today and to continue to work with others on this committee to do something about this serious problem. Thank you.

The CHAIRMAN. Thank you very much, Senator Cochran. We will also include in the record the statement of Senator Pell of Rhode Island who is chairing the Foreign Relations Committee. Otherwise, he planned to attend this meeting and we will also include correspondence from Senator Bingaman and a statement by him.

[The prepared statement of Senator Pell and information referred to follows:]

PREPARED STATEMENT OF SENATOR PELL

Senator PELL. Today we begin a series of hearings on teaching in America. This first hearing is designed to give us an overview of teaching: Its successes and shortcomings, its rewards and frustrations, and what role the Federal Government might have in strengthening this essential profession.

Several bills have been introduced in this Congress on this topic. Primary among these are S. 1675, Senator Kennedy's, "Excellence in Teaching Act" and my own S. 1676, "National Teacher Act of 1989". Future hearings by the Subcommittee on Education, Arts and Humanities, which I chair, will focus on the details of these proposals. The purpose of today's hearing is to give us an overview on the status of teaching in our nation. Toward this end, we will be hearing from experts who have done research on the profession as well as those with a more general perspective on teaching.

The question of prepared, retaining, and upgrading teaching will be a primary focus of the Subcommittee on Education's work in the next session of Congress. There is no issue which I consider more important. Ours is a society which places great emphasis on physicians who doctor our bodies. We also place a high status on psychiatrists who heal our emotional problems. Lawyers are given great regard for their knowledge of the law. Yet, how little recognition we give to those who shape our children's original thoughts and actions. To those who teach the fundamental principals of law to the average citizen, we offer low pay. To those who spark the future doctor's first curiosity for science, we offer little societal recognition. To those who take on the emotional traumas of poor, handicapped, and neglected children in their fittest interaction with their more privileged peers we offer few incentives to strengthen and improve their profession.

It is this disparity between the importance of the teacher's task and the support our Nation provides those in the profession that is the driving force behind my legislation. The National Teacher Act would promote innovative teacher training programs, encourage

minorities to enter the teaching profession, forgive student loans of those who teach in impoverished areas, and establish both national and local teacher academies so that all teachers can upgrade their subject knowledge and teaching skills.

Through the hearing process I am certain that we will have a stronger legislative proposal and one that can be signed into law by the end of this Congress.

[The correspondence of Senator Bingaman and statement follows:]

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United States Senate

October 30, 1989

The Honorable Edward M. Kennedy
Chairman
Senate Committee on Labor and Human Resources
428 Dirksen Senate Office Building
Washington, D.C. 20510-6300

Dear Ted:

I was pleased to learn that you would be chairing a hearing on S. 1675, the Excellence in Teaching Act, and S. 1676, the National Teacher Act, tomorrow morning. I am enclosing a statement in support of these legislative initiatives, and I ask that it be included in the official hearing record.

Once again, I commend you on the leadership you have shown in this important area, and I look forward to continue working with you as these measures develop. I would be most pleased to have the opportunity to testify before the Committee in the future on S. 1675 and S. 1676. Additionally, I would be honored to discuss S. 451, legislation I introduced earlier this year to establish a national "Future Teacher Training Corps." Our legislative ideas are similar and, I believe, complimentary.

Again, thank you for this opportunity to express my support for the Excellence in Teaching Act and the National Teacher Act. Together, I am confidant that we will achieve our mutual goal of improving the quality of life for all of our children.

Best regards.

Sincerely,

Jeff Bingaman
United States Senator

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United States Senate

Statement by Senator Jeff Bingaman
Hearing of the Senate Committee on Labor Resources
on S. 1675, the Excellence in Teaching Act of 1989
October 31, 1989

Mr. Chairman, thank you for allowing me the opportunity to comment on these important legislative initiatives. Before beginning my testimony, I would like to commend you, Mr. Chairman, and the chairman of the Subcommittee on Education, Arts, and Humanities, Senator Pell, for the tireless leadership both of you have given this Congress and this country in our effort to improve the quality of life for all of our children.

I am pleased to be a cosponsor of the Excellence in Teaching Act and the National Teacher Act, legislation heralding the beginning of a renewed and reinvigorated commitment to the future of our children and our country. Be assured Mr. Chairman, these measures have my wholehearted support.

These bills would direct our attention and resources toward the key to educational excellence: The professionals who teach our children.

For some time, I have been gravely concerned about reports of a "future" shortage of quality teachers in our nation's classrooms. The reports urged us to take action then -- three, five, six years ago -- but we did not. Instead, we talked about the problem. We conducted more studies. We issued more reports.

Well, the "future" is here, and the national teacher shortage is real. Despite a widespread awareness of the problem, in recent years we have taken precious few steps toward meeting the challenges posed by the nation's teacher shortage. And despite this awareness, we have done little to assure our children of the quality education they deserve. Instead, we have spent years talking about these problems.

Now, we must take action. If we do not, all of the talk and debate about educational reform, all of our good intentions, will be meaningless. If we do not take action

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now, we threaten our children's future and our country's position as a leader in the competitive world of the 21st century.

Through this legislation, we begin to take action. We begin to turn our talk into a real and lasting commitment to our children -- to their educational excellence. Through this legislation, we begin to rebuild our foundation of teachers -- qualified teachers who can nurture the changes that must be made in our educational system so that all of our children can achieve excellence.

Mr. Chairman, I say that this legislation will help us rebuild our foundation of teachers because, daily, that foundation is eroding, and we are rapidly slipping to the point where our schools will be besieged by a "teacher deficit".

This deficit comes at a particularly challenging time for us, a time when the effects of our nation's economic condition threaten our long-term ability to compete in the international marketplace. As the world's nations move toward a global economy, if America is to remain a leader, we must remain competitive. To do this, we must motivate and prepare our children well. We must do all we can to ensure that they receive a quality education. Without question, quality begins in the classroom -- in their classroom and in the classroom of their teachers.

Unfortunately, strong demographic and social forces must be overcome if we are to take the steps necessary to assure our children of a quality education. Estimates are that nearly one million people will have to enter the teaching profession by 1993 if our children are to have enough teachers to fill their classrooms. That means we will need about 360,000 more teachers than are now expected to be available.

Two years ago, a school district in my home state of New Mexico conducted a survey of area colleges to determine the number of students who had chosen education as their profession. Of more than 95,000 undergraduates surveyed at selected universities in Colorado, New Mexico, and Arizona, only 5 percent were enrolled in teacher training. At the University of New Mexico, only 3 percent of those surveyed planned to become teachers. This helps explain why school districts in New Mexico are forced to go beyond our state's borders to fill 50 percent of their teacher demand.

Adding to the problem is the high attrition rate within the teaching force. Estimates are that 20 percent of all new teachers leave the profession during their first year and that more than half of all new teachers leave the profession within six years. This occurs at a time when the children of the "baby boomers" are swelling the enrollment in our schools.

School districts throughout the country are feeling the pinch. One of the largest school districts in my state, the Albuquerque Public School District, reported that for the 1987-1988 school year, it would need 600 new teachers. Recruiters planned to find 375 of those teachers outside of New Mexico. Annually, the district must replace about 600 teachers from turnover, growth, and retirements. Yet this district is one of the most desirable places in which to teach in New Mexico. School districts in the rural -- some very remote -- areas of the state often have even more difficulty attracting and keeping teachers. Mr. Chairman, as this legislation is further discussed and developed, I would urge you and the members of the Committee to be attentive to these needs. Certainly, the needs of our rural school districts and our rural children are great. We must not turn our backs on the problems they face.

I understand the severity of the educational crisis in our large, urban inner cities, and I am pleased that this legislation specifically addresses this crisis. But I also know that there is a crisis of equal gravity in many of our rural school districts. I know that children in Magdelena, New Mexico, many of whom must travel several miles over gravel roads everyday to get to school, deserve a quality education. I know that the children in Cuba, Coyote, and Pine Hill deserve a quality education. I know that our responsibility does not end at the city limits; it extends into every town, community, and reservation in this country.

Mr. Chairman, these problems are not unique to the rural communities of my home state. School districts around the country often recruit teachers from Germany, Spain, and other nations because of the current U.S. deficit. Schools in New York reported recently that they had imported nearly 200 teachers from Spain between 1985 and 1987.

As problematic as the teacher shortage is nationally, its effect unfortunately may be felt hardest by those in the greatest need of assistance -- our minority children. This is because the proportion of minority teachers in our education workforce is declining at a rate even sharper than that of the teacher population as a whole. And the changing

composition of the student body is directly opposite to the changing composition of our teaching force. As you noted when this legislation was introduced earlier this fall, Mr. Chairman, in 45 of the country's largest cities, minority children make up 70 percent of the student population, while only 30 percent of the teaching force is minority. Without question, these students need role models and a teaching system that reflects the diversity of their unique racial and cultural heritage.

By no means is this legislation a panacea for all of the challenges that will be described as discussions continue on this legislation. But these bills can serve as excellent starting points. Their many provisions can help us reach the necessary goal of achieving excellence in our teaching force. These bills will enable us to:

-- recruit highly qualified individuals into the teaching profession;

-- improve the training opportunities for new and experienced teachers; and

-- increase the status of the teaching profession.

Importantly, these measures place special emphasis on the shortage of minority teachers, the shortage of teachers for certain subject areas (math and science), and certain needs (bilingual, handicapped, preschool). Again, I would urge the Committee to include geographic teacher shortages -- both urban and rural -- as well.

I am particularly pleased that the Excellence in Teaching Act incorporates major portions of a legislative idea that I have introduced in the past two Congresses, S. 451, the Future Teacher Training Corps Act of 1989. This bill would establish a program through which states would award graduate fellowships to outstanding undergraduate students and mid-career people who are interested in the teaching profession. In return for the award, the recipient would agree to teach in geographical areas or in subject areas where a shortage exists. The bill names mathematics and the sciences as key subject areas, but would allow the states to identify three additional subject areas as being in need of teachers. States also would determine which districts suffer the greatest shortage of teachers, from remote rural areas to inner city schools.

Like the Future Teacher Training Corps Act, the bills under discussion today will provide an incentive for

individuals, both in college and in other careers, to become teachers through a new "National Teacher Corps."

Mr. Chairman, I will conclude by reiterating that the time to act is now. We in the Congress have talked about the problems facing our educational system long enough. For our children's sake, the talking must end and serious action at the federal level must begin.

Education will continue to belong to the state and local governments, but I believe there is room for the federal government to encourage capable individuals to consider teaching careers. This nation must be prepared for the challenges of the future, and I believe this legislation is a step toward that preparation. Thank you.

Senator COCHRAN. We look forward to our first witness, Senator Domenici from New Mexico. I want to just say to the outset Senator Domenici has been enormously interested in a variety of different education issues, but in particularly in the areas of math and science. He has spoken to me on a number of different occasions about his own concerns about where we are going as a society, where we are going as a country, and how we are going to meet our challenges down in the future, given the trend lines in math and science, an area of very special concern to him, as it should be for all of us.

He has been someone who has been supporting those general recommendations in this area, but he has a very special interest and a special knowledge about it, and we are very pleased to have him appear before our committee and to make what comments that he would make. Senator Domenici.

STATEMENT OF HON. PETE DOMENICI, A U.S. SENATOR FROM NEW MEXICO

Senator DOMENICI. Thank you, Mr. Chairman, Senator Cochran. It is nice to be with you. Let me first say, I claim no special expertise, Mr. Chairman, but I did have the good fortune to be a math teacher in the public school system before I went to law school. And frankly that was a long time ago. It is interesting that, when I talk to math teachers today, they have very similar problems to those that I had when I was 21 years old, teaching math in the junior high in Albuquerque, New Mexico.

I also am privileged to have eight children of my own. They have now completed the public school systems and shortly, all but two, will be out of college. They will be finished at Christmas. It will be a great Christmas, Mr. Chairman. We have no more tuitions. The problem, however, is that three of them will be lawyers and I am a lawyer.

I am very worried about changing the attitude in our country of what teaching is all about so that the very best of our young people might choose this very very noble profession. That is why I am here. I am frightened. When I see the problems that a 45-year old teacher who has been teaching for 20 years has with the classroom today, and when I look across the profile of students that are entering our colleges and graduating, I find two things that are dramatic.

First, the number choosing teaching as a profession when they enter college is not on the upside but on the down side. And second, Mr. Chairman, the very frightening profile of academic achievement prior to entry into college of those that are choosing teaching. We better be worried. Most profiles of college student bodies would indicate that those who are electing early on to be in the colleges of education are in the lower scholastic achievement through high school. There are many things to talk about something as sacrilegious as why do we even have college of education. I will not bother to talk about this issue now.

We have got to be worried. The excellent students coming out of high schools are not electing to be teachers. You know the numbers

better than I. The problem is enormous, so I want to talk about just two things.

We could spend time talking about the certification process in our school systems. This process is going through a positive evolution. But we have a ways to go. Is our certification process exciting enough to people who have not gone through a regular education curriculum? Are we drawing on expert scientists and mathematicians who are out there and trying to get them into our classrooms?

This country has a rare opportunity, in my opinion, to challenge the young people to become educators. If I could leave any message with this committee, it would be that we must find the very best way possible to excite young people to become educators. Frankly, I don't believe any of us have the capacity to do that. The Excellence in Teaching Act, which I am a cosponsor of, will not do the whole job but it will make a tremendous start. I recently introduced a bill, the College Honor's Program, give incentives to those who wish to teach math, science and in areas such as Indian reservations, but, again, it's a start. While I think my approach is another good one, it will not do the job in total either.

In traveling around the world, I have met people that belong to the Peace Corps. They are excited about the commitment they have made to that program. I am not at all sure that they are earning as much money as their talented counterparts, but somehow they have chosen to be part of a team that is doing something rather exciting. And I can tell you, Mr. Chairman and the distinguished Senator from Mississippi, the young people of this country are ready to be excited about doing something for both this country and for other young people.

In my own family, and from talking to other Senators, I can tell you that there are many children who are in college or just getting out of college that are literally frustrated about the fact that they cannot find a way to do something for this country in a meaningful and institutionally recognized way.

I think if we do nothing else other than to make a strong commitment to recognize young people with talent who want to become teachers, to give them a special designation as they go through college, to give them some incentive that is meaningful, to urge colleges of this country to begin to recognize young people with talent as part of a teacher corps, and to feed and kindle enthusiasm, we would be taking a giant step.

It is obvious that those who are currently teaching need help in these special areas—in math, in science and in all of these fields which are changing so rapidly. It is literally frightening to go in and talk with a 7th or 8th grade math or physics teacher, and to find that these teachers have no way of reigniting the enthusiasm of these fields in their students. That is why I think that anything we can do to give those people who are in the field an opportunity to rub shoulders with current issues in science and math is very exciting and also necessary.

If we only did those two things we would make a difference. We need to create some major incentives for the very brightest to become part of the teaching team in this country. Mr. Chairman, in my mind, no incentive is too big. If we want to forgive loans or

give students grants to go through school, making forgiveness conditional upon teaching their fellow young people in this country, we should do it. The cost is not going to be big in comparison with the commitment we are going to get and the enthusiasm that will come from these young people who feel like they are a part of the solution to a major problem in this country.

On the other side of the coin, there is the issue of helping those already in the teaching profession. I will cite an example in my home State of New Mexico. I once saw an idea that we ought to ask businesses in the field of science or math to give teachers in that field a job for the summer. The idea is to get a science teacher from a high school who would go work at for example, Los Alamos Laboratory for 3 months. This program I refer to in New Mexico asked the school to monitor the teachers. Would you believe that, for 11 consecutive years, 10 to 15 science and math teachers in my little State were employed for the summer at a fixed rate, $1,000 a month in a laboratory where science is being practiced and math is being used. You ought to see the enthusiasm that is generated when these teachers come back to their classroom. The enthusiasm exists because we have given them a chance to once again feel like they are a part of the exciting change that is occurring in math and science in the United States.

Clearly, we have a very big challenge. Our country has an enormous challenge. We cannot solve all of the problems, but I urge that, whatever you can do to establish for the young people of this country a challenge to become teachers, that we do it. This is an incentive laden society, but I am absolutely convinced the more important thing is to make young people feel they are wanted and that they can do a great job for this country in the field of education.

Mr. Chairman, whatever you can do to muster that enthusiasm, whether it be with incentives or with any kind of laurels that you could bestow on that group, I know it will work. This country needs an infusion of the very brightest into our school systems teaching our young people subjects such as math, science, and physics. Perhaps, as indicated in your bill, Excellence in Teaching, Mr. Chairman, students can get excited about helping those less fortunate than themselves, particularly in the center cities. I know our young people worry about problems faced by inner city youth and we need to provide an opportunity to encourage them to become part of a team that will solve these problems.

Mr. Chairman, I am ending up where I started. There is no simple solution the very complicated problems in our educational system. And if we try to bite off more than we can chew, we will flounder. But we should first of all use our absolute best innovative ideas to encourage the brightest young people to get into education. What does it take to do that? How do you make young people feel like they are part of a team in changing a country? And second, we must give those teachers who are in the classroom trying to teach during these very difficult and changing times an opportunity to get re-enthused, to once again to feel that they are part of the change that is occurring in the world, that they are important, we care about them. And that we must have excellence in education and teaching or our country will not make it.

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If we do those two things to the best of our ability—attract the brightest into teaching and keep them enthused—we would be doing a great deal. Mr. Chairman, I do not think the cost would be exorbitant, but let me repeat, if there is a chance it will work, there is no other idea that deserves resources being applied to it as much as this one, a problem that cries out for us to help.

Mr. Chairman, thank you for giving me a chance to appear here today. I do not think this committee really needed anything from me, but I do not have the luxury of serving on this committee, so I am grateful to come here to speak. And I just wanted you to know that there are a lot of Senators out there that are worried about this issue and enthused about us trying some new approaches to get the best of American young people into the classroom to teach those who are going to succeed them and to see to it that this country continues to succeed. Thank you very much, Mr. Chairman.

The CHAIRMAN. Thank you very much, Senator Domenici. I welcome the fact that my colleagues here have the chance to hear you out. This kind of energy and commitment is something that I have had the good opportunity to experience from my own direct conversations in the past and no one could hear you this morning and not know that this is something you thought about and something that you believe is extremely important. And the fact that you take the time to join with us is something that we are very grateful for. And the fact that you have also been the ranking minority member on the Budget Committee, a former Chairman of the Budget Committee and the Appropriations Committee and know the resource situation that we are facing and still feel that this is an appropriate area of investment, I think ought to be extremely heartening for those that are likewise concerned about it.

Again, the concept of working through some Teacher Corps program, we are all going to have to try and find just the way we can thread that needle, but I think we have got a very broad consensus about the opportunities that that presents. And I think it has broad support in our committee, but we want to work very closely with you as we fashion our legislation. I do not know if any of our colleagues would like to make any comments. We have been joined by Senator Kassebaum.

Senator KASSEBAUM. Mr. Chairman, just to say I regret not hearing the whole statement, but it was an eloquent statement I think we would all agree, and I share the thoughts expressed by Senator Domenici and pleased to be a cosponsor of the legislation that we are considering today.

Senator COCHRAN. Mr. Chairman, let me compliment our friend and colleague on the excellent presentation he has made to our committee this morning. I think he has really touched on some subjects that we need to think more about. We need to work on much more than we are working on them now. Devote as much energy and imagination as we can to try and address more effectively these problems that he cites. The alternative certification issue is one that is treated in our President's proposal in the Excellence and Education Act that has been introduced in both Houses. That is something that needs our attention. And there are many other areas—the incentives that you talk about, the new program to attract the brightest students to pursue opportunities in the edu-

cation field, I think are very very important for us to think about. And I congratulate you on the work you are doing and the thoughts you are giving to this area and express our appreciation for your taking time to be here before our committee this morning.

Senator JEFFORDS. I would just join in the accolades. Senator, it is so incredibly important that we raise the awareness of this Nation into the critical nature of this problem and I am hopeful that we can do that, and certainly with your help we have a much better chance.

I have a statement, Mr. Chairman, I would like to make a part of the record at this point.

[The prepared statement of Senator Jeffords follows:]

PREPARED STATEMENT OF SENATOR JEFFORDS

Senator JEFFORDS. Mr. Chairman thank you for calling this hearing on S. 1675m the Teacher Recruitment, Training and Professionalism Act and S. 1676, the National Teacher Act today. With recent education summit and the media's attention focused on the status of our schools, students and teachers these bills are both timely and needed.

We have all read the discouraging accounts of our Nation's educational performance. Students are graduating from high school ill-prepared to meet the needs of the world in which they live. Illiteracy is on the rise and a capable workforce is on the decline. Reports indicate that students don't have the incentive or desire to stay in school, dropout rates have climbed and continue to soar.

Meanwhile, our world has not slowed down to pick up these students. Skills shortages are occurring while we have large numbers of people at risk of economic disadvantage because they do not have the combination of education and skills needed to work in today's technological environment.

Yet to end this cycle our young people must have the opportunity to be trained and educated. They must be able to grow and change with the evolution of technology and the world economy. Knowing how to read, comprehend, compute, reason and analyze are fundamental.

That's where these bills fit in. S. 1675 and S. 1676 understand that before we can have an educated workforce we must begin by educating our children and before we can educate our children we must have the teachers to do it. furthermore, these bills acknowledge that teaching is a difficult job often accompanied by few rewards and little gratification. I applaud Senators Kennedy and Pell for these bills which will invigorate recruitment and preservice training, place an emphasis on minority recruitment and encourage inservice training.

It is time that our Nation understands that teachers are the backbone of our future generation. They are at the heart of the equation to strengthen our schools. Attention, incentives and encouragement are needed to reinforce the fact that teachers have been and will continue to be the bedrock of our future generations. I am glad to be a cosponsor of both of these pieces of legislation.

The CHAIRMAN. We have passed out the President's program. Actually we have hotlined it. We have no holds on it, you might say,

from our side of the aisle, and we are clearing up a couple of little matters that are of concern to a couple of our colleagues. But we are very hopeful of having that passed. I want to thank you very much.

Senator DOMENICI. Thank you, Mr. Chairman. Thank you, members.

The CHAIRMAN. On our first panel, we have three very distinguished experts in the area of teacher recruitment, training and retention.

Dr. Linda Darling-Hammond has recently joined the faculty at Columbia Teachers College after spending a decade at the Rand Corporation doing extensive research and writing in this area.

Dr. Beverly Glenn has recently become a Dean of the School of Education at Howard University. Prior to that, Dr. Glenn was at the National Science Education Association and at the Center for Law and Education at Harvard University.

Dr. Shirley McBay is Dean for Students at the Massachusetts Institute of Technology and Director of the Quality Education for Minorities Project. She has done extensive work in the areas of minority teacher recruitment, particularly in the areas of math and science.

We thank all of you for joining with us here this morning. And we will start off with Dr. Linda Darling-Hammond.

STATEMENTS OF DR. LINDA DARLING-HAMMOND, PROFESSOR OF EDUCATION, TEACHERS COLLEGE, COLUMBIA UNIVERSITY, NEW YORK, NY; DR. BEVERLY CAFFEE GLENN, DEAN, SCHOOL OF EDUCATION, HOWARD UNIVERSITY, WASHINGTON, DC; AND DR. SHIRLEY McBAY, DEAN FOR STUDENT AFFAIRS, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MA

Ms. Darling-Hammond. I would like to thank you for the opportunity to testify on these two important pieces of legislation. My first job was as an English teacher in the public schools. My education was partly supported by the National Defense Student Loans that were launched during the last wave of teacher shortages, and part of the issue I think we face is not just how to get bright teachers in the classroom, but also how to keep them there once they have made an initial commitment.

The bills before you do an excellent job of laying out the problems we face in terms of the rising demand for and the shrinking supply of entering teachers, the critical shortages in cities and in key teaching fields, such as mathematics and science, early childhood education, bilingual and special education, among several others, and the need for more and better teacher training.

The seriousness of the problems addressed by these bills really cannot be overemphasized. The most recent estimates from the National Center for Education Statistics put the demand for teachers at just over 2,000,000 new hires between now and 1995—the supply of potential new entrants at about 135,000 a year, which is a gap of over 1 million between the potential new supply and the anticipated demand.

Of these new entrants, in recent years only 9 or 10 percent have been members of minority groups and that proportion has been de-

clining steadily. Since the 1970's, the number of minority college graduates entering teaching has decreased by well over 50 percent. Many expect that if current trends continue, by the year 2000 only about 5 percent of the teaching force will represent the more than 30 percent of students who are Hispanic, African American, Asian American or Native American.

In addition to these discouraging trends, only about three-fourths of those who prepare to teach actually do enter teaching. So our supply is decreased by the proportion who find after they leave college that other more desirable jobs are available to them. And again, the proportion is even lower for minority teaching candidates and is lower for those people in high demand shortage fields, such as math and science.

Of those who do enter, about half of our teachers leave within their first 5 years on the job. Again the proportion of those who stay appears to be lower for minority entrants, especially those who teach in central city schools and teachers in other shortages fields, such as the physical sciences leave more quickly and at higher rates.

The reasons for the shortages are no mystery, even with recent increases in teachers 'salaries, they remain about 25 percent below those of other college graduates and about 30 to 50 percent below the salaries of scientists and engineers. And that has been a long-standing phenomena that contributes to what has really been a chronic shortage of mathematics and science teachers over the past 30 to 40 years in our country.

It might be worth noting that these kinds of wage disparities do not exist in most other industrialized nations. Japan pays its teachers 'salaries at the salary level of engineers in order to avoid the unfortunate outcome that we have had plaguing our schools for a long time.

What has happened then is that we have got a situation in which too few of our students are well enough prepared by our high school to take advanced level of math and science courses. And even if they were prepared, we have too few qualified teachers available to offer more upper level courses. You have seen some of the statistics on the problem already, but it might be useful to understand as well that because of the situation only about 3 percent of American students can take calculus compared to four or five times that rate in other countries. And in a given year, a third of American high schools do not even offer a physics course. If they wanted to do so, they would not have the personnel available to do it.

All students are affected by teacher shortages, but those who reside in districts who can offer fewer inducements to teaching suffer the most. We have seen data on how the shortages are much higher in central city schools. This means that the districts with our largest concentrations on the poor children, minority children, children of immigrants are also those where incoming teachers are least likely to have had training and up-to-date teaching methods or to have had courses on how children grow, learn and develop and what to do if they are having difficulties.

Many children in central city schools are taught by a parade of short-term substitute teachers, inexperienced teachers who leave

before their first year is up, and beginners without training or support.

There has been a recent small increase in schools of education across the country that does not yet show up in the national statistics which are a bit lagged behind the current time. That is encouraging. At the same time, it is not nearly enough to begin to close the gap. Current enrollment would need to double in order to close the gap that we are now facing. The enrollments are increasing the least quickly in the key shortage areas—bilingual education, physical sciences, special education, and foreign languages.

So clearly we do need inducements if we are going to address this problem. I think that one of the things that we have learned over recent years in terms of our efforts to improve education is that even if we create wonderful curricula and we try other management techniques in our schools, if teachers are not well enough prepared to teach what they are asked to teach, then we cannot make those other improvements using other strategies.

I want to commend the emphasis in both of these bills on improved teacher education, as well as improved teacher recruitment. Except for the 1970's, this country has experienced shortage of teachers for almost this entire century. We have only had one decade with a brief surplus. And we usually solve these shortages by lowering educational standards for new entrants and disinvesting in teacher education.

In virtually every college and university in this country, we spend less on the education of teachers than we do on the education of any other college major, and we spend far less than the education of any other professional in a professional school. This stands in contrast to the policies of other nations with respect to teaching, and it stands in contrast to the ways in which we handle shortages in other professions in this country.

I think that the Health Professions Education Assistance Act that Congress passed in 1963 when we had shortfalls of physicians, which provided scholarships and loans to medical students, created incentives for physicians to train in shortage specialties and locate in underserved areas, as well as to improve the caliber of medical training. Because medical schools were thought of in at least as unkind terms as sometimes schools of education are today, has had a tremendous effect over the 25 years it has been in existence on the quality of medical training and the supply of physicians in this country and has contributed to a perception that ours is one of the finest medical educational systems in the world.

I think the bills offered by Senators Kennedy and Pell have the potential to make a similar contribution to the quality of American teaching and teacher education.

As not only a recipient of a National Defense Student Loan in my college years, but also a candidate in a quick-fix alternate route to teacher certification, I can also attest that there are better ways to prepare teachers for the challenges they will meet in today's classrooms than some of the shortcuts that have been tried in the past. I have seen and studied some exciting, innovative, and rigorous teacher education programs that are now being launched to attract both shortage area teachers into the classroom and teachers

in under represented groups. They are training the kinds of teachers we will need to meet our current challenges.

And I think that this legislation offers us the prospect of making a national investment to expand that kind of high quality teacher preparation so that the teachers we recruit will be competent and knowledgeable, as well as plentiful.

[The prepared statement of Dr. Darling-Hammond follows:]

PREPARED STATEMENT OF DR. LINDA DARLING-HAMMOND

I am Linda Darling-Hammond, Professor of Education, at Teachers College, Columbia University and, until this fall, Director of the RAND Corporation's Education and Human Resources Program where I spent most of the last ten years studying questions of teacher supply, demand, and quality.

Thank you for the opportunity to testify on these two important pieces of legislation, Senate Bills 1675 and 1676. These bills are critical to our national efforts to build an educational system that will meet the social and economic needs we face. They recognize, as we must, that an adequate supply of highly qualified and well-trained teachers is a major cornerstone of a school system that works for all children.

The bills do an excellent job of laying out the problems we face in terms of the rising demand for and shrinking supply of entering teachers, the critical shortages in cities and in key teaching fields, such as mathematics and science, early childhood education, bilingual and special education, among others, and the need for more and better teacher training.

The seriousness of the problems addressed by these bills cannot be overemphasized. The most recent estimates from the National Center for Education Statistics place the demand for teachers at just over 2,000,000 new hires between 1988 and 1995 [see chart 1] -- and the supply of potential new entrants at about 135,000 each year, totalling just over 1 million over the same time period.

Of these new entrants, in recent years only 9 to 10 percent have been members of minority groups [1], and the proportion has been declining steadily. Since the 1970s, the number of minority college graduates entering teaching has decreased by more than 50 percent. Many expect that if current trends continue, by the year 2000 only 5 percent of the teaching force will represent the more than 30 percent of students who are Hispanic, African American, Asian American or Native American.

In addition to these discouraging trends, only about 3/4 of those who prepare to teach actually enter teaching after graduation, and the proportion is even lower for minority teaching candidates. [2] Of those who do enter, about half leave during their first five years. Again, the proportion of those who stay appears to be lower for minority entrants, especially those who teach in central city schools [3]. And teachers in other shortage fields, such as the physical sciences, also tend to leave more quickly and at higher rates [4].

The reasons for teacher shortages are no mystery. Teachers salaries declined by more than 15 percent during the 1970s, widening the wage gap that already existed between teachers and other college graduates. Recent increases have returned average teacher salaries to the level they had reached in 1972, but since 1986 they have leveled off again to remain about 25 percent below those of other college-educated workers and 30 to 50 percent below the salaries of scientists and engineers [see chart 2].

It might be worth noting that these kinds of wage disparities do not exist in most other industrialized nations, and they are not experiencing the kinds of teacher shortages we are -- especially in mathematics and science areas. Furthermore, virtually all of these European and Asian nations continually outperform the U.S. on measures of mathematics and science achievement. In fact the chronic shortages of mathematics and science teachers in our nation's schools over the past 30 to 40 years have contributed to a situation in which too few students are well enough prepared by high school to take advanced level courses, and even if they were, too few qualified teachers are available to offer more upper level courses. Consequently, while the demand for scientifically trained workers continues to increase, the number of U.S. students earning degrees in the sciences and mathematics has been stagnant or declining since about 1975 [5].

Three quarters of U.S. principals report that they have difficulties filling mathematics and science vacancies with qualified applicants. When this occurs, schools must either cancel courses or fill these vacancies with teachers who are not fully qualified. (Charts 3 and 4 indicate that more than half of newly hired mathematics and science teachers were uncertified for their positions in 1981, and about 1/3 of the total math/science teaching force is not fully qualified for the courses they teach.) For these reasons, for example, only about 3 percent of American students take calculus, compared to 4 or 5 times that ratio in other countries [6]. And in a given year 1/3 of American high schools do not even offer a physics course [7].

All students are affected by teacher shortages, but those who reside in districts which can offer fewer inducements to teaching suffer most. Shortages are much higher in central city schools (see chart 5). Of the tens of thousands of uncertified teachers hired on emergency credentials in recent years, the great majority teach in central cities. This means that districts with the greatest concentrations of poor children, minority children, and children of immigrants are also those where incoming teachers are least likely to have training in up-to-date teaching methods or to have had courses in how children grow, learn, and develop (and what to do if they are having difficulties). Many children in central city schools are taught by a parade of short-term substitute teachers, inexperienced teachers who leave before their first year is up, and beginners without training.

Though many schools of education are reporting increases in enrollments (in traditional as well as nontraditional programs, and in graduate schools as well as undergraduate departments), these are not yet nearly enough to ensure that the gap will be filled with teachers who are actually prepared to teach. Current enrollments would need to nearly double in order to close the gap between anticipated demand and new supply. And enrollments seem to be increasing least quickly in the key shortage areas: the physical sciences, bilingual education, special education, and foreign languages. Inducements to teaching are clearly needed if we are to address current and projected shortages.

The effects of these shortages on our ability to respond to pressing national needs is devastating. While the curriculum must grow more

sophisticated to handle the challenges of a more technologically demanding future, teachers must also know a great deal about student learning, motivation, and development to meet the needs of students who are unlikely to be taught at home if they are not well taught at school.

If children are shortchanged at school, there is less probability than in times past that their families will be able to make up for the deficit. Children today likely to have less adult time available to them at home than was true in the past. Seventy percent of mothers work outside the home. Many children live in single-parent homes. (More than half will live with one or no parent at some time during their school careers.) One out of four children lives in poverty. While schools cannot change or fully offset what children experience at home, they can certainly do better during school hours by ensuring a competent, knowledgeable teacher for every child.

We must look to teachers not just to deliver lectures and assign homework, but to know enough about teaching and learning that they can find and encourage students' strengths, diagnose students' difficulties and respond with effective teaching strategies. We cannot meet shortages with warm bodies any longer. We must fill teaching vacancies with professionally trained teachers.

In this regard, I want to commend the emphasis in both of these bills on improved teacher education as well as teacher recruitment. Except for the 1970s, this country has experienced shortages of teachers for most of this century [8] and has "solved" them in part by lowering

educational standards for new entrants. This stands in contrast to the policies of other nations with respect to teaching, and it stands in contrast to the ways in which we handle shortages in other professions in this country.

For example, when shortages of physicians were a major problem more than 25 years ago, Congress passed the Health Professions Education Assistance Act in 1963 to support and improve the caliber of medical training, to provide scholarships and loans to medical students, and to create incentives for physicians to train in shortage specialties and to locate in underserved areas. That sustained effort -- continued for more than two decades -- has had a substantial impact on the quality of medical training in this country and the supply of physicians, contributing to the world-wide perception that ours is one of the finest medical education systems in the world.

The bills offered by Senators Kennedy and Pell have the potential to make a similar contribution to the quality of American teaching and teacher education. Their emphasis on recruitment and improved training is supported by many things we've learned in recent years:

- o In terms of their ability to promote student learning, teachers who are better prepared make more effective teachers than those who are not fully prepared [9].

- o Those who are better prepared, in terms of both their teacher education experience and their initial clinical training (i.e. first year supervised internships and prior student teaching

experiences) are more likely to stay in teaching through the initial years of high attrition than those with less training and assistance [10].

- We have at least 40 years of evidence that trying to improve teaching without improving teacher education is largely ineffective.

In this last regard, I am most mindful of our experiences since Sputnik in trying to improve mathematics and science education. Though we have invested periodically in teacher recruitment and training, the levels of investment have never been large enough or sustained enough to overcome our chronic shortage of mathematics and science teachers. The millions of dollars used to develop new curricula -- even very good ones -- are rendered useless if teachers cannot understand or use these tools effectively. We must recruit talented teachers and train them very very well indeed if we are to make great progress at meeting our educational goals.

As a recipient of a National Defense Student Loan in my college years during the last wave of teacher shortages, I can attest to the fact that the forgivable loan strategy renewed in this legislation was effective in persuading me and many others to try teaching. As a candidate in a quick-fix alternate route to teacher certification, I can also attest that there are better ways to prepare teachers for the challenges they will meet in the classroom than some of the shortcuts tried then. I have seen and studied some exciting, innovative, and rigorous teacher education programs that are training the kinds of teachers we will need

to meet our current challenges. I am pleased to see this legislation offering us the prospect of national investments to expand high-quality teacher preparation so that the teachers we recruit will be competent and knowledgeable as well as plentiful.

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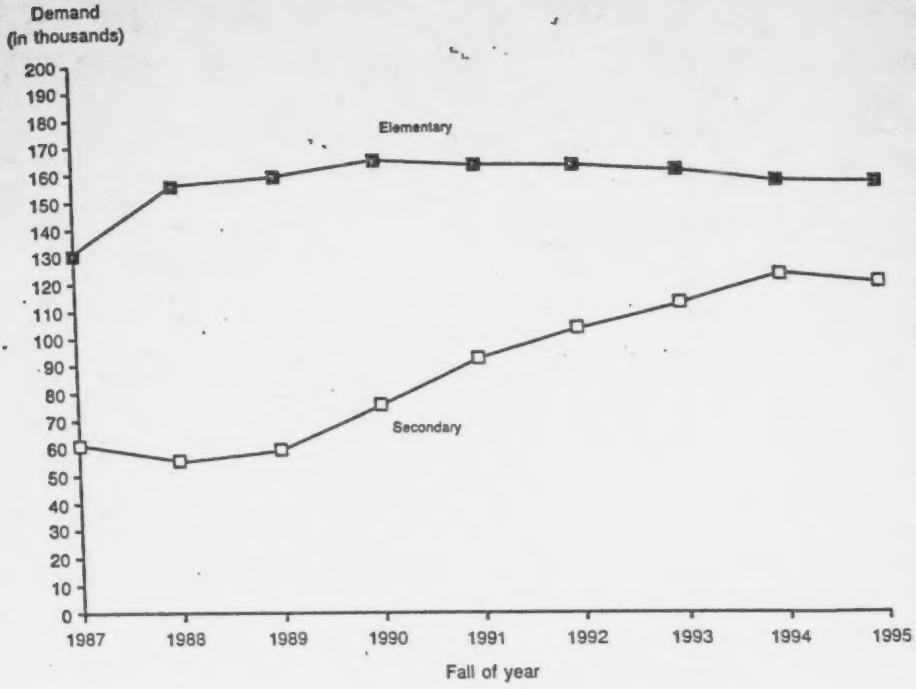
CHART 1 –Trends in projected demand for new hiring of teachers, by level

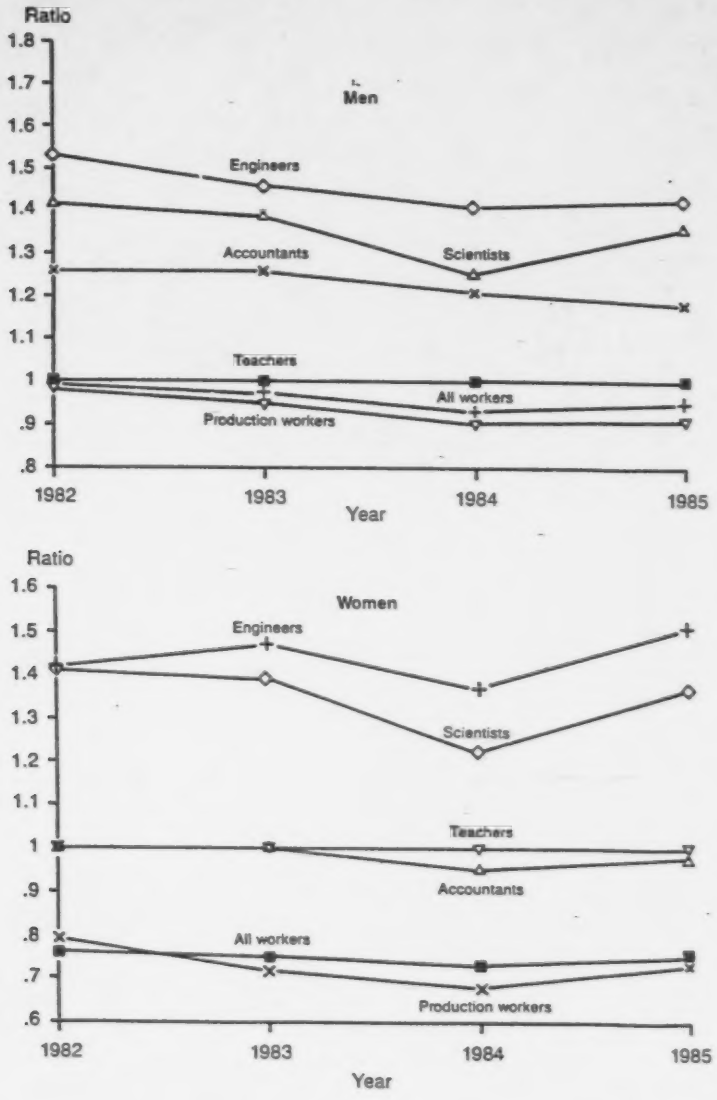


Trends in the demand for hiring more classroom teachers in elementary/secondary schools: 1987 to 1995

Fall of year	Projected demand for more teachers* (in thousands)		
	Total	Elementary	Secondary
1987	192	131	61
1988	211	156	55
1989	218	159	59
1990	240	165	75
1991	255	163	92
1992	266	163	103
1993	273	161	112
1994	281	157	123
1995	277	157	120

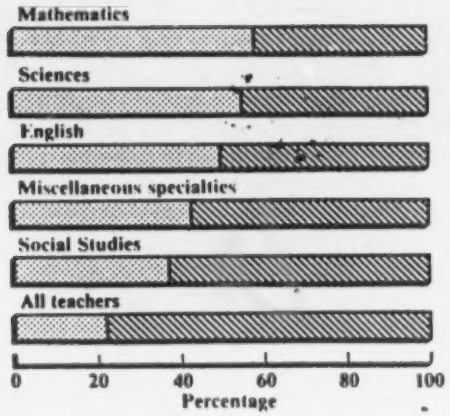
*See Sources of Data in appendix C for projection methodology.
NOTE: Details may not add to totals due to rounding.
SOURCE: U.S. Department of Education, Center for Education Statistics, (special tabulations, December 1986).

CHART 2 —Ratio of earnings of other workers to teacher earnings, by selected occupation: 1982 to 1985



SOURCE: Bureau of the Census, Current Population Reports.

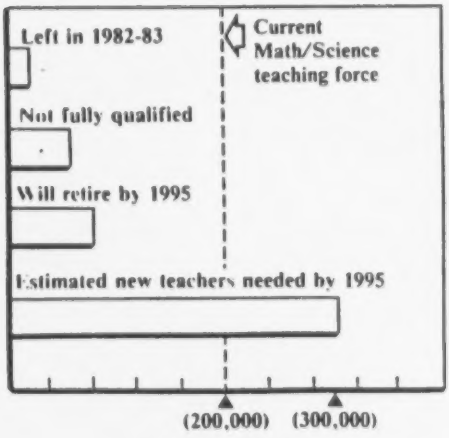
Chart 3



Qualifications of New Teachers for the Field They Are Currently Teaching (1981)

NCES, The Condition of Education, 1983.

Chart 4

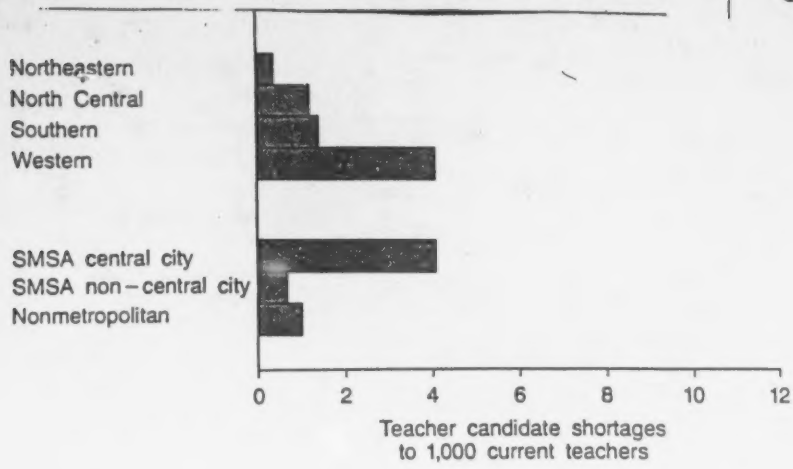


Status of the Mathematics and Science Teaching Force

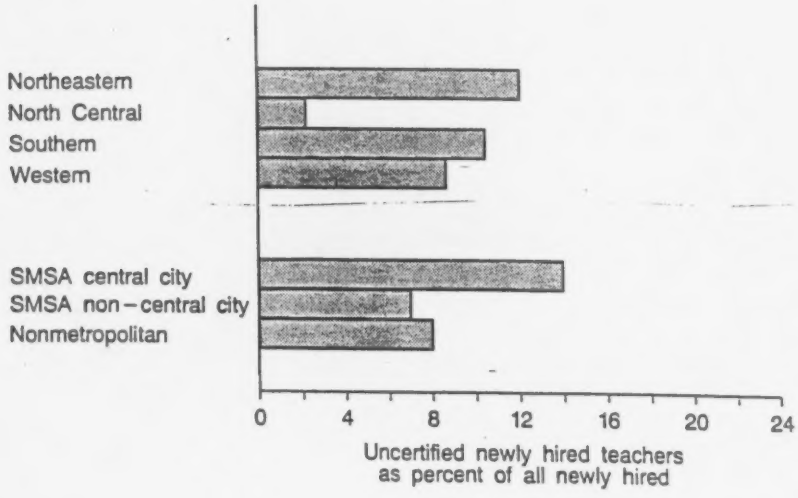
National Science Teachers Association Survey, 1704.

Chart 5

Teacher Candidate Shortages as Ratio to 1,000 Current Teachers



Newly Hired Teachers Uncertified in Principal Field of Assignment as Percent of All Newly Hired



The CHAIRMAN. Very fine. Dr. Glenn.

Ms. GLENN. I would like to say that I am a former teacher corps intern of the 1960's. I got into education through a very strange route, but essentially the teacher corps changed my life, and changed me from a math and science major to a teacher, and I am proud to be a teacher.

Three major questions must be adequately addressed if we are to change teaching so that it serves the needs of students now and in the future. Those questions are: (1) how will already practicing teachers be retrained and re-tooled to be more responsive to a changing student mix and changing national circumstances; (2) what should the education of new teachers include; and (3) who will replace the approximately 50 percent of practicing teachers who will be eligible for retirement within the next 10 years?

Whenever there are shortages of practitioners, every profession seeks to gain control over the number of new entrants. By erecting barriers to entry into the undergraduate major, professional school and first year of practice, professions drive up quality and salaries through the manipulation of scarcity. Teaching is no different. By about 1995, about one million classroom vacancies must be filled according to data from the American Association of Colleges for Teacher Education (AACTE). Who will fill these vacancies, by whose leave, under whose auspices and with which criteria becomes important. These answers will be shorted out by teachers unions, the National Board for Professional Teaching Standards, accreditation agencies, Sate directors of licensing, chief State school officers and superintendents.

While all of these groups want to have the highest caliber practitioners in front of every classroom, divergent views about the problem cloud the practical implementation of the goal of high quality, warm bodies. During teacher shortages, school systems admit every available adult into practice, seemingly without regard to quality. This is done through alternative and emergency licensure. Emergency licensure of under-prepared practitioners angers unions, sets the public to bad mouthing teachers, and makes it difficult to recruit undergraduates into what is seen as an unglamorous and thankless profession.

Traditionally, inner city schools, where teacher shortages never seem to disappear, are privy to a disproportionate share of differently, alternatively, and creatively licensed teachers. Thousands of such teachers work every day under very difficult conditions. Some of them excel in these circumstances, but many thousands flounder and give up. Nick Paley, head of teacher education at George Washington University, cites the statistic that 73 percent of first year teachers in the New York City schools quit by Christmas.

The first Teacher Corps programs, started in the 1960's, provided the high quality training necessary for nonteacher education major to survive and thrive in inner city schools. The rich combination of heavily supervised internships connected to university programs and community service provided a model for effective teacher education which should be reinstated.

The 20-year reunion of my Urban Teacher Corps program was the only reunion that I have ever attended. Teacher Corps made me understand the world in a very very different way.

The circumstances in which poor children go to school provide the clearest example of the interconnection between the practice of teaching and teacher education. The task of teaching will become more difficult as the crisis of the urban under class becomes more intense. According to the National Education Association (NEA), only about 20 percent of newly minted teachers want to teach in cities. That is a problem. Only about 16.9 percent of the teachers in big city systems report living within the attendance area of the school in which they teach. The next round of teacher and administrator retirements in big cities may be more than problematic.

Schools of education, like mine, cannot continue to field teachers who are trained to interact only with middle class families having 2.5 children, mommy working in the home, and dad in the work force. These families now comprise only 7 percent of the total. Every family is now a different family. As the student mix in the Nation's school changes to approximately one-third persons of color, the teaching force is becoming increasingly white.

By the end of 1990, only about 5 percent of teachers will be black. Historically Black institutions like Howard will enroll about one-third of the Black undergraduates in teacher education. Minority teachers are essential to the self-esteem and expectations of minority youngsters. Minority teachers are also necessary so that the racial isolation of white children can be ended. White children and children of color need to see adults of every hue in the full range of roles and responsibilities that the society can offer.

If the Nation is to take seriously its duty to educate every student, nothing short of a declaration of emergency will suffice. If we are not to lose another generation to miseducation, every one of the Nation's 2.34 million teachers must be able to participate in professional development of some sort. If we have reached a national consensus that our competitive advantage in global markets depends on the enhanced literacy of the work force and a re-investment in human capital, the people who teach teachers need to know that.

If we are clear that ever student should finish 12 years of schooling with the ability to read, write, compute, engage in higher order, critical thinking, and posses saleable skills, new teachers must be taught differently. If education research over the last 10 years has alerted us to the existence of schools which work well for poor children, new teachers need to know that. New teachers need to know how to enhance learning through the use of technology, if they can get their hands on it. New teachers need to know the latest in research and policy in their profession. New teachers need to know enough about economics and politics and technology and culture and science and mathematics, so that students will want to learn to learn. New teachers need a new type of teacher education, and I hope this bill will in some way help that to happen.

There is evidence that new teacher candidates are bright now, and will be teachers by choice and not necessity, and that is the lag that Linda talked about in the data. NEA research shows that teachers under the age of 30 are more likely than ever to report that their fathers have done graduate work than older teachers. Data collected by AACTE suggests some encouraging news. Education enrollments have been rising since 1986. Most institutions are

attempting to upgrade their teacher preparation programs. Most institutions are attempting to review an alter the curriculum and change the liberal arts offerings given to pre-service teachers. Formal partnerships with local school districts are being established.

The next generation of teachers may be exactly what the profession needs, but we need more of them. Keeping these bright and capable people will be hard, given the stresses. Continual support and in-service training will help retain some of these practitioners. According to the National Education Association, in 1961 only 11.7 percent of practicing teachers would probably or certainly not teach again. By 1986, this percentage had risen to about 31.3 percent of teachers. Almost one-third of practicing teachers would not do it again. Revitalizing already practicing teachers is imperative.

The mean age for all teachers in 1986 was 41 years. More teachers under 40 were in progressively smaller school systems according to the NEA. The trend toward older teachers is accelerating nationwide. Teachers associations can play an important part in the reinvigoration of older teachers, but the society must reinvest in the people who are already in the classroom.

[The prepared statement of Dr. Glenn follows:]

PREPARED STATEMENT OF DR. BEVERLY CAFFEE GLENN

THREE MAJOR QUESTIONS MUST BE ADEQUATELY ADDRESSED IF WE ARE TO CHANGE TEACHING SO THAT IT SERVES THE NEEDS OF STUDENTS NOW AND IN THE FUTURE. THOSE QUESTIONS ARE:

1. HOW WILL ALREADY PRACTICING TEACHERS BE RETRAINED AND RE-TOOLED TO BE MORE RESPONSIVE TO A CHANGING STUDENT MIX AND CHANGING NATIONAL CIRCUMSTANCES?
2. WHAT SHOULD THE EDUCATION OF NEW TEACHERS INCLUDE?
3. WHO WILL REPLACE THE APPROXIMATELY 50% OF PRACTICING TEACHERS WHO WILL BE ELIGIBLE FOR RETIREMENT WITHIN THE NEXT 10 YEARS?

CONTEXT

WHENEVER THERE ARE SHORTAGES OF PRACTITIONERS, EVERY PROFESSION SEEKS TO GAIN CONTROL OVER THE NUMBER OF NEW ENTRANTS. BY ERECTING BARRIERS TO ENTRY INTO THE UNDERGRADUATE MAJOR, PROFESSIONAL SCHOOL AND FIRST YEAR OF PRACTICE, PROFESSIONS DRIVE UP QUALITY AND SALARIES THROUGH THE MANIPULATION OF SCARCITY. TEACHING IS NO DIFFERENT. BY 1995, ABOUT 1 MILLION CLASSROOM VACANCIES MUST BE FILLED ACCORDING TO DATA FROM THE AMERICAN ASSOCIATION OF COLLEGES FOR TEACHER EDUCATION (AACTE). WHO WILL FILL THESE VACANCIES, BY WHOSE LEAVE, UNDER WHOSE AUSPICES AND WITH WHICH CRITERIA BECOMES IMPORTANT. THESE ANSWERS WILL BE SORTED OUT BY TEACHERS UNIONS, THE NATIONAL BOARD FOR PROFESSIONAL TEACHING STANDARDS, ACCREDITATION AGENCIES,

STATE DIRECTORS OF LICENSING, CHIEF STATE SCHOOL OFFICERS AND SUPERINTENDENTS.

WHILE ALL OF THESE GROUPS WANT TO HAVE THE HIGHEST CALIBER PRACTITIONERS IN FRONT OF EVERY CLASSROOM, DIVERGENT VIEWS ABOUT THE PROBLEM CLOUD THE PRACTICAL IMPLEMENTATION OF THE GOAL OF HIGH QUALITY, WARM BODIES. DURING TEACHER SHORTAGES, SCHOOL SYSTEMS ADMIT EVERY AVAILABLE ADULT INTO PRACTICE, SEEMINGLY WITHOUT REGARD TO QUALITY. THIS IS DONE THROUGH ALTERNATIVE AND EMERGENCY LICENSURE. ALTERNATIVE LICENSURE OF UNDERPREPARED PRACTITIONERS ANGERS UNIONS, SETS THE PUBLIC TO BAD MOUTHING TEACHERS AND MAKES IT DIFFICULT TO RECRUIT UNDERGRADUATES INTO WHAT IS SEEN AS AN UNGLAMOROUS AND THANKLESS PROFESSION.

TRADITIONALLY, INNER CITY SCHOOLS, WHERE TEACHER SHORTAGES NEVER SEEM TO DISAPPEAR, ARE PRIVY TO A DISPROPORTIONATE SHARE OF DIFFERENTLY, ALTERNATIVELY AND CREATIVELY LICENSED TEACHERS. THOUSANDS OF SUCH TEACHERS WORK EVERY DAY UNDER VERY DIFFICULT CONDITIONS. SOME OF THEM EXCEL IN THESE CIRCUMSTANCES, BUT MANY THOUSANDS FLOUNDER AND GIVE UP. NICK PALEY, HEAD OF TEACHER EDUCATION AT GEORGE WASHINGTON UNIVERSITY, CITES THE STATISTIC THAT 73% OF FIRST YEAR TEACHERS IN NEW YORK CITY QUIT BY CHRISTMAS.

THE FIRST TEACHER CORPS PROGRAMS, STARTED IN THE 1960'S, PROVIDED THE HIGH QUALITY TRAINING NECESSARY FOR NON-TEACHER EDUCATION MAJORS TO SURVIVE AND THRIVE IN INNER CITY SCHOOLS. THE RICH COMBINATION OF HEAVILY SUPERVISED

INTERNSHIPS CONNECTED TO UNIVERSITY PROGRAMS AND COMMUNITY SERVICE PROVIDED A MODEL FOR EFFECTIVE TEACHER EDUCATION.

[THE TWENTY YEAR REUNION OF MY URBAN TEACHER CORPS PROGRAM WAS THE ONLY REUNION I EVER ATTENDED. TEACHER CORPS MADE ME UNDERSTAND THE WORLD IN A VERY DIFFERENT WAY.]

NEW TEACHERS NEW CIRCUMSTANCES

THE CIRCUMSTANCES IN WHICH POOR CHILDREN GO TO SCHOOL PROVIDE THE CLEAREST EXAMPLE OF THE INTERCONNECTION BETWEEN THE PRACTICE OF TEACHING AND TEACHER EDUCATION. THE TASK OF TEACHING WILL BECOME MORE DIFFICULT AS THE CRISIS OF THE URBAN UNDERCLASS BECOMES MORE INTENSE. ACCORDING TO NATIONAL EDUCATION ASSOCIATION (NEA) DATA, ONLY ABOUT 20% OF NEWLY MINTED TEACHERS WANT TO TEACH IN CITIES. ONLY ABOUT 16.9% OF THE TEACHERS IN BIG CITY SYSTEMS REPORT LIVING WITHIN THE ATTENDANCE AREA OF THE SCHOOL IN WHICH THEY TEACH. THE NEXT ROUND OF TEACHER AND ADMINISTRATOR RETIREMENTS IN BIG CITIES MAY BE MORE THAN PROBLEMATIC.

SCHOOLS OF EDUCATION CAN NOT CONTINUE TO FIELD TEACHERS WHO ARE TRAINED TO INTERACT ONLY WITH MIDDLE CLASS FAMILIES HAVING 2.5 CHILDREN, MOMMY WORKING IN THE HOME AND DAD IN THE WORKFORCE. THESE FAMILIES NOW COMPRISE ONLY 7% OF THE TOTAL. EVERY FAMILY IS NOW A DIFFERENT FAMILY. AS THE STUDENT MIX IN THE NATION'S SCHOOLS CHANGES TO APPROXIMATELY 1/3 PERSONS OF COLOR, THE TEACHING FORCE IS BECOMING INCREASINGLY WHITE.

By the end of 1990, only about 5% of teachers will be Black. Historically Black institutions like Howard will enroll about 1/3 of the Black undergraduates in teacher education. Minority teachers are essential to the self-esteem and expectations of minority youngsters. Minority teachers are also necessary for reducing the racial isolation of white children. White children and children of color need to see adults of every hue in the full range of roles and responsibilities that the society can offer.

If the nation is to take seriously its duty to fully educate every student, nothing short of a declaration of emergency will suffice. If we are not to lose another generation to miseducation , every one of the nation's 2.34 million teachers must be able to participate in professional development of some sort. If we have reached a national consensus that our competitive advantage in global markets depends on enhanced literacy in the workplace and a re-investment in human capital, the people who teach teachers need to know that. If we are clear that every student should finish 12 years of schooling with the ability to read, write, compute, engage in higher order, critical thinking and possess saleable skills, new teachers must be taught differently. If education research over the last 10 years has alerted us to the existence of schools which work well for poor children, new teachers need to know that. New teachers need to know how to enhance learning through the use of technology. New teachers need

TO KNOW THE LATEST IN RESEARCH AND POLICY IN THEIR PROFESSION. NEW TEACHERS NEED TO KNOW ENOUGH ABOUT ECONOMICS AND POLITICS AND TECHNOLOGY AND CULTURE AND SCIENCE AND MATHEMATICS SO THAT STUDENTS WILL WANT TO LEARN TO LEARN. NEW TEACHERS NEED A NEW TYPE OF TEACHER EDUCATION.

THERE IS EVIDENCE THAT NEW TEACHERS CANDIDATES ARE BRIGHT, AND WILL BE TEACHERS BY CHOICE AND NOT NECESSITY. NEA RESEARCH SHOWS THAT TEACHERS UNDER THE AGE OF 30 ARE MORE LIKELY TO REPORT THAT THEIR FATHERS HAVE DONE GRADUATE WORK THAN WERE OLDER TEACHERS. DATA COLLECTED BY AACTE SUGGESTS SOME ENCOURAGING NEWS . EDUCATION ENROLLMENTS HAVE BEEN RISING SINCE 1986. MOST INSTITUTIONS ARE ATTEMPTING TO UPGRADE THEIR TEACHER PREPARATION PROGRAMS. MOST INSTITUTIONS ARE ATTEMPTING TO REVIEW AND ALTER THE CURRICULUM AND CHANGE THE LIBERAL ARTS CURRICULUM. FORMAL PARTNERSHIPS WITH LOCAL SCHOOL DISTRICTS ARE BEING ESTABLISHED.

THE NEXT GENERATION OF TEACHERS MAY BE EXACTLY WHAT THE PROFESSION NEEDS. KEEPING THESE BRIGHT AND CAPABLE PEOPLE WILL BE HARD, GIVEN THE STRESSES. CONTINUAL SUPPORT AND IN-SERVICE TRAINING WELL HELP RETAIN SOME OF THESE PRACTITIONERS. ACCORDING TO THE NATIONAL EDUCATION ASSOCIATION, IN 1961 ONLY 11.7 PERCENT OF PRACTICING TEACHERS WOULD PROBABLY OR CERTAINLY NOT TEACH AGAIN. BY 1986, THIS PERCENTAGE HAD RISEN TO ABOUT 31.3 PERCENT OF PRACTICING TEACHERS. REVITALIZING ALREADY PRACTICING TEACHERS IS IMPERATIVE.

Practicing Teachers

The mean age for all teachers in 1986 was 41 years. More teachers under 40 were in "progressively smaller school systems" according to the NEA. The trend toward older teachers is accelerating nationwide. Teachers associations can play an important part in the reinvigoration of older teachers who must remain active and involved in the classroom until retirement. Who will replace retiring teachers?

The CHAIRMAN. Thank you very much, Dr. Glenn. I appreciate the comments on that old Teacher Corps. As you may remember, that was one of those programs of the 1960's that had some positive impact, and it was basically phased out as you remember in 1980. But we are looking again at some of the lessons and some of the successes of that program. As you may remember, that really developed at the time when Virginia had a massive resistance and they closed all of the public schools. And at that time it was actually the Justice Department who worked out—a person who is still a very close personal friend of mine, Bill Vandeville, made this pitch to school teachers all over the country to help in the public school systems, and they responded overwhelmingly and set up really an alternative school system for about a year, 2 years. And it worked enormously well and it was really from that kind of experience that we tried to do the Teacher Corps that you have identified here, and that was in effect for a number of years. And that has been effectively closed down, but there are some things that we can certainly learn from it in dealing with the problems.

Dr. McBay, we want to thank you and noticed you have had a very distinguished background. One of the features of it was the work that you did at the Science Foundation on the programs of minority students. As you may remember, we tried to do something out of this Committee in 1975 to try and get both women and minorities in the science programs. We tried to get the NSF to be particularly sensitive to those issues and I noticed you worked on that program, as well. So we're glad to have you here.

Ms. MCBAY. Thank you very much, Mr. Chairman and members of the Committee and distinguished panelists. It is a wonderful opportunity to be here to talk with you about the math and science preparation of our students and our teachers. I think that the bills that you are considering ought to be taken though in a broader context, and that is, that we ought to have as a national goal the preparation of students whose math and science achievements will be nothing less than the best in the world. And in order to accomplish that, it seems to me that we ought to have as a national goal the graduation from high school, especially from those high schools in inner cities and rural settings, students who math and science achievements will enable them to enter without mediation into the work force or into college so that they can pursue math and science careers and have that as options.

There are several ways that one can achieve this kind of goal and the bills are addressing one of those and that is that you want to empower educators to be innovative, effective, state of the art teachers in mathematics and science. I want to offer my strong support for the legislation that is under consideration. I think that it hits the mark in four ways, four fundamental ways as they relate to American education.

The first is that we cannot discuss American education without addressing the needs of minority students. We see that very clearly from the demographic trends unless we are ready to ignore one-third of our population or soon to be one-third of our population, then we have to pay attention to the needs of minority students. The demographic changes have implications for all segments of so-

ciety, but nowhere will that implication be more immediate or evident and more important than in education.

If we look at our Nation's schools today, we see that in kindergarten, 30 percent of the students are already minority and we expect by the year 2000 that the public school enrollment will be one-third minority. So the question that we have to ask ourselves is will our schools inspire and teach minority youngsters so that they will be the next generation of engineers, scientists, doctors and policy-makers that this country will need or will the schools continue to be alienating and frustrating to minority youngsters so that we end up squandering another generation of minority talent. That is the basic question from my point of view.

The second point that the legislation addresses is the fact that our schools are not capable of meeting the challenges we are facing internationally. You can see that in all kinds of international comparisons on standardized tests that measure mathematics and science skills, our children tend to be at the bottom on most of those comparisons. If you look at it from the point of view of the amount of time actually spent studying math and science in high school, you will see that the average children in Russia and China spend almost twice as much time studying biology and chemistry and almost three times as much time studying physics as our students.

While our students continue to flounder or when it comes to mathematics and science, the demand for such occupations continues to soar. We see that between now and the year 2000, that we will expect a 36 percent increase in the demand for scientists and engineers. And you know that the National Science Foundation has projected that by the year 2006, if we continue to produce baccalaureates at the level that we are in science in mathematics, we will be 700,000 short in scientists and engineers.

So it is clear that we have to pay attention to minorities if we are going to try to address these problems. Now we know that between now and the year 2000, according to the Hudson Institute's work force 2000, that 30 percent of all of new entrants into the work force between now and then will be minority. Not only will these new workers have to be better educated at the pre-college level, they will also have to be better trained and better educated in college because at that point some half of our jobs are going to require some college and at least 30 percent will require bachelor's degree.

The third way in which your legislation addresses needs is this. And that is it recognizes that our efforts to date to increase minority participation in mathematics, science and engineering, those efforts have been mixed at best. And you can see that very clearly from the very poor representation from minorities and the pool of scientists and engineers.

One of the most important reasons that minority children today have difficulty with mathematics and science is that nobody expects them to be successful at it. Their teachers do not expect it, their parents do not expect it, and the children themselves do not expect it.

The fourth and final point that I think the bill recognizes is the role of minority teachers, especially in mathematics and science. That role is critical to bringing about the changes that we need. I

ask each of you to consider the impact on your life if you had grown up in school and had never seen a respected adult figure in the classroom who looks like you, or if you had never studied the contributions of other Americans who share your appearance or culture, or if you were never taught by teachers who were fluent in the language in the language that you were most fluent.

Minority teachers clearly serve as role models. They provide inspiration. They serve as surrogate parents, counselors, and these days they serve as community leaders. As you well know, we have a very dramatic shortage of minority teachers and Linda has talked about that. The hope for the future is not very bright. Less than 8 percent of those who are in teacher education programs are minority and many of those will not become or be successful because they are not going to be able to pass the competency test that exists in most States. However, it is very critical as you are suggesting in your legislation that we have concentrated and sustained efforts to produce well trained minority teachers.

But clearly minority students for some time to come will be taught by nonminority teachers and that fact underscores the need for assuring through training that these teachers understand and appreciate the culture and language of minority children. Minorities are very under represented in math and science teaching. Under 3 percent of the math and science teachers are Black and less than 1 percent are Hispanic. The problems there have been exacerbated as was indicated earlier by placing unqualified teachers in math and science classrooms.

But let me say in closing that I strongly endorse the efforts of the Committee to pass these bills. I think that they would indicate to potential teachers that we are very serious about making teaching a respected and valued profession. There are other concerns that we have to address like the way we test teachers and the salaries they receive, and I certainly believe that the issues addressed in the legislation are all critical in solving the problem. Thank you.

[The prepared statement of Dr. McBay follows:]

PREPARED STATEMENT OF DR. SHIRLEY M. MCBAY

Mr. Chairman, members of the Committee, and distinguished panelists, it is a great honor to be invited to speak with you this morning on topics of such importance to the nation: the education of minority students, and the future of the teaching profession. I have been asked, in particular, to focus on the status of educationally underrepresented minorities in the teaching ranks, as well as the teaching of mathematics and science. I will also submit for the record a somewhat longer version of these remarks for your reference.

I would like to begin my remarks by offering my strong support for the legislation now under consideration by the Committee. It seems to me that the legislation hits the mark by taking into account what I would consider to be four fundamental points about American education as we enter the 1990s:

First, and what is really the bottom line in my mind, is that we cannot discuss American education at present without addressing the needs of minority students. Demographic trends are changing the face of America: right now, about 22 percent of all Americans are minority, and the best estimates indicate that by about the year 2020, one-third of our nation will be American Indian, Asian, Black, or Hispanic. This will occur not because

of a decline in the majority White population, but because of a much faster growth rate among minority groups, as well as immigration. From 1985 to 2000, for example, the White population is expected to increase by less than 7 percent, while the Black and Hispanic population will increase by 23 and 46 percent. These figures remind us that if we take the world view that the modern international economy compels, then what we call "minority" peoples in America are, in fact, the majority population on this planet.

These enormous demographic changes in the United States have implications for all segments of our society, but nowhere will they be more immediate, more evident, and more important, than in education. Indeed, in our nation's schools, the future has arrived: right now, some thirty percent of all kindergartners are minority, and by the year 2000, a third of all public school students will be non-White.

Of course, the distribution of these students is far from even. The greatest concentration of minority students takes place in our urban centers, and in tribal areas of the West and Southwest. Today, minority students are in the majority in 23 of our 25 largest central city school districts, in the states of California, Mississippi, and New Mexico, and nearly so in Texas. In another 25 states, minority students make up more than 25 percent of the public school population.

The question that we must answer is complex, but the implications are stark: Will these schools inspire and teach our

non-White children to be the next generation of engineers, scientists, scholars, doctors, and policymakers that the nation needs so badly, or will schools continue to be so alienating and frustrating to minority youngsters that we end up squandering another generation of minority talent?

This question raises the second fundamental point that I raise in support of your bills: at present, our schools, our increasingly minority schools, are incapable of meeting the challenges of a new era of international economic competition. The world economy is driven by powerful new technologies, and our schools, as they are presently staffed and structured, will not provide the skilled workforce needed to sustain our economic competitiveness.

As MIT President Paul Gray said recently,

> "Our educational system accepts mediocrity as the norm, especially in math and science. In some senses, education has reverted to its industrial age model wherein an elite group gets the quality education necessary for leadership and decisionmaking, while the remainder get the basic skills necessary for a lifetime of work in the factory. I submit that we are failing at both tasks. We define the elite group too narrowly and we have too little expectation of what they should learn and understand. And as for the group that is supposed to do that lifetime of work in the factory, I suggest that there is no such factory job in which the skills stay the same year after year."

At present, the best of America's scientific workforce is still among the world's finest because, despite the advances of others, our nation retains a technological lead in many areas. That lead is sustained primarily by the quality of our major research institutions, which are among the finest in the world.

It is also sustained because we still attract a significant portion of the best technological and scientific minds from around the world.

The uneven quality of the rest of the workforce, however, leaves the nation increasingly vulnerable, and based on our comparisons of our students and those in other nations on mathematics and science proficiency, there is little reason to hope that the next generation of workers will strengthen our competitiveness.

A recent National Science Foundation international comparison of mathematics and science skills among 13-year-olds in 6 nations shows American youngsters at the bottom, with Korean children scoring four times better than their American counterparts. A 1986 survey of fifth graders showed that our most gifted science and mathematics students scored below the average Japanese student. A recent National Assessment of Education Progress test shows that half of American 17-year-olds cannot handle junior high level mathematics problems, and only 7 percent were ready for college science courses. (Half of these students could not identify whether 87 percent of 10 is greater or less than 10.) Ninety-eight percent of current secondary students in the Soviet Union complete a compulsory mathematics sequence which includes introductory calculus in grades nine and ten, but less than half of American students take even a year of plane geometry. The average student in the USSR and China spends almost twice as much time studying biology and chemistry and more than three times as

much time studying physics than his or her American counterpart.

While our students continue to flounder when it comes to mathematics and science, the demand for such occupations continues to soar. Between 1986 and 2000, for example, a 36 percent increase is expected in the demand for scientists and engineers, including a 76 percent rise in demand for computer specialists, a 45 percent increase in the number of scientists needed, and a 48 percent increase needed in electrical engineers. By the year 2006, according to NSF, without an increase in the number of students earning bachelor's degrees in mathematics and science, there will be a shortage of 400,000 scientists and 275,000 engineers.

Nonetheless, the Boston Globe recently reported drops in engineering enrollment at many universities in New England, including Northeastern, U-Mass Amherst, Tufts, and, MIT. Surveys of students taking the pre-SAT showed a 10 percent drop between 1985 and 1988 in those interested in majoring in engineering in college, and a 45 percent drop in those interested in computer science. The number of White males earning degrees in science and engineering has declined greatly, and the popularity of these fields among women has reached a plateau as well in recent years. Indeed, surveys of freshman women have shown a decline in interest in science and engineering careers over the past several years. Much of this loss of scientific and engineering talent, especially at the graduate level, has been made up in our universities by intensive outreach to international students.

The answer to this challenge, quite simply, must come from America's minority population. It was the landmark study by the Hudson Institute, Workforce 2000 that demonstrated that by the end of this century, one in six members of the U.S. workforce will be minority, and that 30 percent of all new workers between now and then will be minority. There we also learned that these new minority workers will not only require better education in schools, but in college as well, for in the year 2000 half of all jobs will require some college, and 30 percent will require a bachelor's degree.

Thus, at a time when our technological supremacy is under challenge from abroad, and when we are facing a massive shortage of engineers and scientists, the nation is beginning to comprehend that the vast untapped potential of minority students lies not as a threat to greatness, but as the best hope for America's revival.

This brings me to my third point: our efforts to increase minority participation in mathematics, science, and engineering fields, which are so vitally important to our economy and national defense, have been mixed at best.

There are a number of successful examples of programs that should and must be replicated, and I urge your consideration of a federal role in support of these efforts. Examples include the Mathematics, Engineering, and Science Achievement Program (MESA), of course, as well as the programs sponsored by the National Association of Precollege Directors, such as the MASSPep Program

in Boston and the Comprehensive Science and Engineering Program in New York City. In Puerto Rico, there are two wonderful programs I would bring to your attention: the Resource Center for Science and Engineering, sponsored by NSF and based at the University of Puerto Rico, and Project C.A.U.S.A. Both provide hands-on science experience for high school and college students, and also help train teachers to be better math and science instructors.

At MIT, we have a program called MITES -- the Minorities Introduction to Engineering and Science program -- which provides a six-week summer residential experience at MIT for approximately 40 minority high school students who have completed their junior year. Now in its 15th year, the program's main objective is to introduce highly qualified, disadvantaged minority students to careers in engineering or science. The program has been quite successful in bringing minority students to MIT, and more importantly, in keeping them at the Institute or at other outstanding universities. In 1986, 16 of the 40 MITES students entered MIT in the class of 1991, and virtually all of the others went on to other institutions. More importantly, 92 percent of all MITES alumni who entered MIT either graduated or are still enrolled.

Next January, the Quality Education for Minorities Project, which I direct under the guidance of Senator Kennedy, who most generously serves as a member of our Action Council, will be issuing an Action Plan for minority education. One of the

recommendations we will make in this Plan is that every college campus should offer a summer program similar to MITES to introduce the excitement of science to minority youth.

Despite the presence of these and many other exemplary projects, it is clear that minority Americans are poorly represented in the mathematics and science fields in careers, as well as academia. In 1986, Black Americans represented 12 percent of the population, about 10 percent of the labor force, and just 2.6 percent of all scientists and engineers. Hispanics made up 7 percent of the population, 5 percent of the labor force, and just 2.1 percent of scientists and engineers, and despite the efforts of groups such as the American Indian Science and Engineering Society, Alaska Natives and American Indians represent less than one percent of the scientists and engineers.

While there is some evidence that the gap in the number of mathematics and science classes taken by minority students and nonminority students is closing, there is little to suggest that the quality of such classes is equivalent. Figures to be released next month by the U.S. Department of Education indicate that Black and Hispanic students took on average less than a semester fewer science classes than White students in 1987 (2.39, 2.33, and 2.64 Carnegie units in science, respectively), a much smaller gap than was the case in 1982 (1.99, 1.79, and 2.27). But one must ask what kind of science class these students were taking, and whether these classes adequately prepared students for college or a career. Of students in academic tracks, for

example, 79 percent of White students took advanced mathematics classes, but just 55 percent of Black students and 54 percent of Hispanic students. The National Assessment of Educational Progress indicates that a minority-nonminority gap in science proficiency opens up at by age 9, and widens in the case of science, by age 17. In both subjects, the average Black and Hispanic 17-year-old is three to four years behind his or her White peers.

At the college level, about 7.8 percent of the baccalaureate degrees awarded in natural and life sciences and engineering in 1987 (the most recent year for which data is available) were earned by Alaska Native/American Indian, Black, and Hispanic students, who made up about 25 percent of the 18-24 year old cohort and about 12 percent of the students enrolled at four-year colleges that year. The minority share of science and engineering degrees falls as one progresses through the pipeline, about 4.4 percent of the master's degrees, and about 4.3 percent of the doctoral degrees awarded that year.

I would like to take a few moments to explore some of the obstacles preventing minority achievement in mathematics and science. The problems, as we shall see, are broad, from the way that teachers teach to the environment in the home to the self-destructive behavior of the children themselves.

One of the most important reasons that minority children today have difficulty with mathematics and science is that virtually nobody expects them to succeed at it. Not their teachers, not

their parents, and most certainly not the children themselves. It is interesting to note that in Japan, it is assumed that mastery of mathematics, and for that matter, all academic subjects, is simply a matter of hard work. It's not what you're born with, in other words, is the Japanese view, it is how hard you work. I would say that in this country, we take the opposite view when it comes to mathematics: if you aren't born a "brain," or with some genetic aptitude for numbers, then you can't do math. Given the low self-image that so many minority youth have, this sense of predestined failure has a devastating effect.

Few of our children today can see that learning is a worthy end in itself, in which satisfaction can be derived from mastery of material whose utility may not be obvious. Few find their natural curiosity nurtured and rewarded either at home or in school. When they do study mathematics, it most often consists solely of drill and practice, rote memorization, and multiple choice tests. Rarely do they experience, and rarer still do they succeed in, the challenge of word problems, abstract reasoning, discerning mathematical patterns, and applying problem solving in mathematics to problems in other areas, or the excitement of learning science through personal observation and discovery. Rarely is the sheer joy of learning for its own sake part of their lives.

In most schools, such experiences are reserved for the sifted few placed in the academic tracks. It is unfortunate, but true, that decisions made about children when they are in kindergarten

or first grade about their potential, based mostly on what they bring from home as opposed to what they can do in school, will place children irrevocably in tracks leading either towards college or towards academic oblivion. Since minority children tend to come from poverty, from cultures unfamiliar to their teachers, or from environments in which behavior acceptable at home is seen as too disruptive, too quiet, or too difficult at school, they tend to be labeled early on as intellectually inferior and placed in the non-academic tracks. While our system is nowhere as rigidly structured as that of some other nations, by the time a child reaches high school, it is virtually impossible to break free of the clutches of the vocational or general track.

These children can draw not only on their own negative experiences in school, but also that of their parents or older siblings, who themselves probably did not excel at or enjoy mathematics. Indeed, there may be no evidence available to them that society values in any way those who are successful in mathematics, or more generally in academics. Instead, what they learn at an early age that science and mathematics are abstruse and difficult, that these areas are irrelevant to their everyday life, or even that succeeding in school is somehow "acting White," injurious to their social status and self-image.

Even when minority students do beat the odds and make it to college, they still face serious barriers to success in mathematics and science, beginning with the inadequate

preparation many bring with them from their schools. What worsens the problem is the poor study habits that youngsters bring to college when they come out of an environment where there is a stigma attached to academic success, where hard work and studying means risking peer rejection.

And even when minority students are well prepared, both in material and study habits, the combination of campus racism, cultural isolation, and lack of minority role models on campus can take a heavy toll. I have seen Black, Hispanic, and American Indian students, possessing all of the qualifications and all of the talent needed to succeed, worn down and eventually broken by the system. So there are no guarantees, but that is not the same thing as saying that there is no hope. There is plenty of hope, and that hope begins with the inspiration minority youth receive from their teachers.

This brings me to my final point, which is the role of minority teachers, and especially mathematics and science teachers, in bringing about the changes that we need to create a new generation of American Indian, Black, and Latino scholars and scientists. The presence of a minority figure in the classroom is of incalculable importance to our children. I ask each of you to consider the impact on your life if you had grown up in school and never seen a respected adult figure in the classroom who looked like you, or never studied the contributions of other Americans who shared your appearance or culture, or never spoke the language in which you are fluent.

Minority teachers serve as role models, inspiration, surrogate parents, counselors, and, these days, community leaders. And I might add, their presence is important not only in predominantly minority classrooms, but in nonminority schools as well. The continuing segregation of housing and schools means that White children may grow up having never seen a Black or Latino adult except on television. Given the division among the races in our schools, we can hardly be surprised at the problems between minority and nonminority college students encountering each other for the first time in a dormitory.

I do not mean to imply that White teachers cannot, or do not, teach minority youngsters effectively, cannot serve as role models, or could not help White and minority students learn to respect each other. Nor is it assured that a teacher of color necessarily understands the students in his or her classroom. But the presence of minority teachers and administrators in classrooms can have an influence on minority youth that is crucial to changing the minority educational experience.

Unfortunately, we have a drastic shortage of minority teachers. The American Association of Colleges for Teacher Education estimates that just 5 percent of the teachers in the present workforce are minority, despite the presence of a minority student population at 30 percent. Less than 8 percent of the students in teacher education programs in 1987 were American Indian, Hispanic, or Black, and this pool is likely to be cut in half by the candidates' subsequent failure to pass

teacher competency tests required for licensing in most states. As other career opportunities open up, and with the continued low salaries and status of the teaching profession, the once-traditional minority career path has become the last choice for many talented minority college graduates.

To achieve parity between the teaching force and the student population would require the licensing and certification of 450,000 minority teachers among the 1.5 million teachers needed for our schools in the next five years. But of the 700,000 new teachers who are expected to be trained in this period, only abut 35,000 are expected to be minority. It is critical that we continue the kind of concentrated and sustained efforts of the type proposed in this bill to produce well-trained minority teachers. But clearly, minority students will be taught for years to come predominantly by nonminority teachers, a fact that underscores the need for ensuring through training that these teachers understand and appreciate the culture and language of minority children.

What we must do is rethink our system so that it does not take a superstar or superhuman, like Jaime Escalante of Garfield High School in Los Angeles, to help a young Black or Hispanic or American Indian student learn. We must rebuild our system so that we identify and cherish the Escalantes, but also train and nurture "mere mortals," so to speak, and also eliminate or redirect the misdirected. Our educational system does none of that now, to the benefit of very few and the detriment of us all.

To work effectively with minority students, teachers of all races and ethnic backgrounds require more and better training in language, multi-cultural curricula, and the cultural values their students bring to the classroom. Teachers must develop management and administrative skills, as the teacher professionalism movement sparked by the Carnegie Task Force on Teaching as a Profession's A Nation Prepared brings school based management to districts around the nation. Teachers must learn new pedagogical techniques that are proven effective with minority students, such as cooperative learning and peer tutoring. And, as we all realize, in the words of Felix Rohatyn, that in the inner city "schools must be more than just schools," teachers must take on new responsibilities for outreach to the home and community, for helping to coordinate the provision of social services to students possibly affected by drug abuse, absent or abusive parents, malnutrition, and other maladies.

Both bills address these needs, but it is clear to me that we must help teachers learn how to take on these challenges. It is sobering to note that at present, the average teacher spends just six hours a year at in-service training sessions.

As underrepresented as minority Americans are in the teaching profession as a whole, the situation is much worse when it comes to the teaching of mathematics and science. Only three percent of the mathematics and science teachers are Black, and just one percent are Hispanic. This is a crisis that is mounting, and the price will be paid in the dwindling interest among minority

Americans in mathematics and science.

Overall, we will need 300,000 new mathematics and science teachers by 1995, compared to the 200,000 presently in place, to keep pace with the 40 percent of present mathematics and science teachers expected to retire by that year, as well as more science course requirements, and enrollment growth. The present shortage has exacerbated the problem of placing unqualified teachers in mathematics and science classrooms. Only one-third of all K-3 science teachers and 40 percent of all 4-6 science teachers meet National Science Teacher Association standards for college science classes. Only one in three elementary science teachers have taken a chemistry course, and just one in five a physics course.

More than 50 percent of all secondary school science teachers have had no college computer classes, and nearly half did not take calculus in college. Only 10-20 percent of all mathematics and science teachers have taken a college-level class for credit in he last ten years, and we have already noted the virtual absence of in-service training for most teachers. Little wonder that about a quarter of elementary teachers described themselves in 1986 as "not well qualified" to teach physical sciences, and that the NSTA found that 30 percent of all secondary mathematics and science teachers were "completely or severely unqualified" to teach these subjects.

Where will our minority mathematics and science teachers come from? Minority college-bound seniors with SAT-Math scores of

550 and above an interest in studying mathematics, science and engineering (MSE) represent a special target of opportunity for significantly increasing the participation of minorities in these disciplines generally and in the science and mathematics teaching workforce in particular.

In January, 1989, the Educational Testing Service released a study entitled "Persistence of High Ability Minority Students in Science" which looked at minority students with math SAT scores of 550 or above who had indicated an intent to major in an MSE field. Two years after taking the test, 61 percent were persisting in their pursuit of science careers, a rate equal to or greater than their White counterparts. Given the underrepresentation of minorities in quantitative fields generally, and among pre-college science and mathematics teachers in particular, this pool of approximately 5,000 students annually represents a major target of opportunity. These high ability students should be singled out for special nurturing beginning with the pre-freshman summer and continuing through graduation at the baccalaureate level. Many of these graduates will be available to serve as teachers; others may continue study of science and mathematics through the doctoral level.

In conclusion, let me say again that I strongly endorse the efforts of the committee to pass these bills, which will indicate to potential minority teachers that we as educators and you as policymakers are serious about making teaching a respected and valued profession. There are of course many other concerns we

must address if we are to produce more minority science teachers, from the way that we test teachers to the salary that they receive. But the issues you address here --financial incentives, early awareness, bilingual programs -- these are all critical to solving the problem.

I know that for minority youth, the faith that you are showing in them will be multiplied and magnified in the good work they will do in the nation's classrooms. These youngsters are the future, and with your help, the future looks brighter.

I thank you, and stand ready to answe. any questions you may have.

For more information, contact Shirley McBay, Project Director, Quality Education for Minorities Project, MIT Room 26-157, Cambridge MA 02139. Telephone: 617/253-4417.

The CHAIRMAN. Thank you very much. Just a general question for the panel. Given the fact that we have such divisive responsibilities between the Federal, State, and local government and that so much of what is happening in terms of teachers is decided at the local level in terms of contracts, in terms of salaries, school boards, how should we view our role at the national level? Which role do you think is appropriate for us? Maybe if you have some insight as to what other countries are doing that would be relevant to that answer, I would appreciate that. I would ask each of you just to take a crack at it.

Ms. Darling-Hammond. I think that the Federal role in stimulating recruitments, providing incentives for students, answering equity concerns is a long-standing Federal role that is modeled in this legislation and it seems quite appropriate. Certainly the national interest in ensuring that we have an adequate supply of teachers grows as we move into a knowledge-based economy and we know that our schools are more important to us. The teacher corps experience in the past was a model of a fruitful investment that simply was not sustained or substantial enough to prevent this wave of shortage. So I think that that is an appropriate Federal role and one that, as I mentioned in my testimony, the Congress has taken with respect to the health professions.

For example, investing in medical education improvement and in recruitment and distribution of physicians to shortage areas. So all of those seem to me to be perfectly useful. They do not step on the toes of the States and the other efforts that they are undertaking currently. And in fact, I think most States would welcome that kind of Federal role. It certainly mirrors what occurs in other countries. In most other industrialized countries there has been a much more substantial national role in both ensuring good quality training for teachers and in underwriting or subsidizing their educational expenses, ensuring that they have scholarships to attend schools of education and to become certified and so on.

So they have taken a very aggressive pro-active stance to avoiding any kind of shortage situation by using the kinds of strategies that are represented here.

The CHAIRMAN. Dr. Glenn?

Ms. GLENN. One of the most important roles that the Federal Government can play is the reassurance to all sectors of the society that the laws will be enforced. And that is, that when you get legislation like this, money is put into it that it will actually get to the people to which it was targeted. When on the House side of the Education and Labor Committee puts together some legislation which says these are the ways that we want to see excellence happen, that the money is spent, that the programs get funded, that the Federal Government will monitor to see that those things happen.

So not only the first instance, putting the money there, but in the second instance, monitoring to see that it gets to the people to which it is targeted. And it is not popular these days to say that there is a need for money. But there is a need for money. The amount of money that the Federal Government has placed into education has declined since 1980 that proportion. We need to get it back up. We never had enough money and we need more.

Ms. McBAY. I just might add that our inability to compete internationally sort of suggests a role for the Federal Government in all of this. In that we cannot it seems to me leave to the States preparing students who will be able to be competitive. It seems to me that we have to have some national goals as I suggested that are set by the Government. That there has to be simultaneously a sort of change in attitude and that has to be set by the—it seems to be from Washington, so that people will understand that we intend to be inclusive and that we can no longer afford to have a two-tier educational system where you are only training an elite group of people. That just will not work any more. It seems to me that that has to start here. That message has to come from here.

The CHAIRMAN. Just a couple of final areas. Dr. McBay, I know that you are the Dean of Students at MIT. How does MIT look at its role in terms of development of math and science teachers? Are any of these important technical schools, Cal Tech, MIT, are they thinking about this? Are they doing very much about it?

Ms. McBAY. I appreciate your broadening the list of schools there. Let me address it from the point of view, say of major research universities, so that any comments I make may or may not be applicable to MIT. Let me say from my own observations from having been at NSF and working with some of these institutions, the presidents and the senior administrators at these institutions seem to understand the importance of these institutions being involved in the preparation of math and science teachers. They see as do the faculty that there is an unevenness in the quality as you try to diversify the student body.

I am not so sure that the faculty see a role for themselves. I am not sure that they have quite entertained the fact that maybe they ought to assume some responsibility in the preparation of teachers. I think that many of them would like to return to what they think of as the good old days when SAT scores were the primary determinants and therefore they would have a different kind of student body. And they are willing, I think, in some instances to do that at the expense of diversity. I think that the surprise that is waiting for many of them though is that these students with high SAT scores will not be predominantly white males. They would tend to be Asian students, so they are not going to be reproducing themselves. And I am talking predominantly about faculties that are white male.

I think that if we were to place a greater emphasis and tenure decisions on excellence in teaching and on student achievement, as well as on research accomplishments that that would send the message to the rest of the educational system that these universities consider education and teaching as important, and therefore, the overall effect would be to elevate teaching as a profession. But it seems to be that these universities have a greater role than they are now assuming.

The CHAIRMAN. Finally, Dr. Glenn, is there a role for the historically Black colleges and universities to improve the numbers and quality of minority teachers?

Ms. GLENN. There, of course, is a role for historically Black institutions. Right now they turn out about one-third of the undergraduate education majors and historically Black institutions turn out

about 50 percent of the blacks with bachelor's degrees, although they are a very small portion of the total number of colleges and universities.

So first of all we recruit on our own campus for people to become teachers. And that is hard because of the reputation of schools of education and some other kinds of things associated with colleges. Someone has to be on the bottom and speaking of someone being on the bottom, we just got some information that the bottom scores in SAT's now are people who intend to major in some sort of computer technology fields, not teachers any more. So we are happy.

So, yes, historically Black institutions can play a major role in quality kinds of considerations. We need to change what it is that we offer to our young people and we need to prepare them better to enter into the profession.

The CHAIRMAN. Senator Kassebaum?

Senator KASSEBAUM. Thank you, Mr. Chairman. I was just struck last spring when I was in Oklahoma and was speaking with the top 100 students, high school students in Oklahoma seniors, and asked how many were planning to go into teaching profession. One hand went up. Senator Boren and I were both visiting with them and then he asked, if you had scholarships and you knew you were getting a scholarship for school for education, would that make a difference? And about two or three more hands went up. I am not sure that I necessarily believe even that is the answer.

I am so struck myself and I think the three of you focused on it as well that we have lost a desire for students to go into teaching. And the schools of education themselves have lost the ability to attract students. I think part of it is and a major part, as you mentioned, is the salaries. As they look to alternative careers where they can get so much more higher salary when they get out of college and that factors into their repayment of student loans. They are really caught in a bind.

And I would like to ask if any of you have information on the Rochester, New York, program where it is my understanding they have significantly increased salaries along with other demands on the teachers. And if you think that there is some merit to this kind of effort or if it has not operated long enough to be able to look at it from strengths and weaknesses?

Ms. Darling-Hammond. The Rochester plan is, I guess, now maybe into the third year of operation and the salaries ranged initially from about $25,000 for beginning teachers to $70,000 at the top of the scale for those who achieve master teacher status. Those who achieve that status also had to commit to teaching in the most challenging schools in the district which I think is an appropriate professional commitment to make. All of that is just getting underway. Parts of it that are quite successful includes such things as experts veterans serving as mentors for beginning teachers and there is some aspects of this legislation that addressed that. I think are very important.

Even though the Federal Government cannot address salaries and working conditions on the ground floor and that is a big piece of it, we can address the fact that 50 percent of beginning teachers, if we recruit them in, will leave in a few years and mostly it is because of lack of support in the first year of teaching. Mentor teach-

er programs like Rochester's have managed in some major cities to cut first year teacher attrition from what is usually around 30 percent in the urban setting to close to 5 percent.

So I think that kind of strategy though does not answer the whole thing. It does to several things. It does give the teachers enough support to become competent and therefore to feel that they want to stay in teaching and it increased the probability that they will learn to teach effectively and consequently be an asset to the students that they teach. So that piece of it, I think, is beginning to prove itself.

Certainly the salary change has done away with the shortages in Rochester, but that is not something that you can necessarily mandate from the Federal level.

Senator KASSEBAUM. But it is certainly something we can talk about because I do think it is a significant part of it.

Ms. GLENN. The other significant part about the Rochester initiative was the involvement of the community in putting the first program together. Eastman-Kodak, the Urban League in Rochester and various other community agencies came together with the schools to respond to a crises. And I think that in some way, that is a good model that can be encouraged by the Federal Government because all of those parts of the community are involved in success.

Ms. Darling-Hammond. Another collaboration is the professional development academy idea that is starting there which is also embodied in the legislation before us. The idea of schools and universities coming together to improve the training of both pre-service and then later in-service. Teachers is something that is being done there as well and in some other cities with that kind of collaboration and with great success. And those really do need—it is a new idea. It is just beginning to blossom and needs some encouragement, some watering, some nurturing for that to begin to flower.

Senator KASSEBAUM. Almost like a sabbatical, it gives some recognition to professionally how important teaching is. It seems to me whatever we can do to attract students to the importance of the profession, raise the standards as you mentioned to engineers, lawyers, and doctors. How do you feel about alternative certification?

Ms. Darling-Hammond. There are a lot of different approaches to alternative certification. Some of them actually are more flexibly designed routes to the same standard of education as other teachers reach fairly vigorous programs. Some of them are four weeks in the summer—one day in child development, one day in classroom management, one day, you know. And those are pretty disastrous. We did a study of a number of nontraditional teacher preparation programs. Most of them required people to achieve a full certificate. Some of those were very successful at both recruiting minorities and boosting math and science—the teaching force—that is what we focused on.

But the alternate routes that we studied provided their graduates with less supervision in their beginning time of teaching than other programs did, and the graduates were least satisfied with their preparation and most likely to say that they did not feel effective and planned to leave. So that some of them might be more effective than others, but there is a real danger that airing too

much on the side of quick solutions can be a revolving door of people in and out.

There are though ways to structure programs so that they are more receptive to mid-career changes without undermining what they need to know to teach.

Ms. McBAY. I just might add a caveat here. I guess I am concerned about alternate routes to the extent that we do not talk about providing alternate routes to becoming doctors or alternate routes to becoming civil engineers, so I guess I would worry about the quality of the people who enter it through these routes. It is more than just knowing facts. Being an effective teacher requires more than just a mastery of facts. So it seems to me that we have to be very careful, even though we do have this major shortages that we do not end up putting in people who are covering or who are manning the classrooms, but who really do not care that much about the students who are in front of them.

Senator KASSEBAUM. Thank you very much.

The CHAIRMAN. Just one final question. I think each of you at one time or other referenced some newer trends. I guess starting maybe 1986 or 1987. What did they show and what do you believe is the reason for them?

Ms. Darling-Hammond. I think perspective teachers are responding to a marketplace in which salaries did rise some. And though they are not where they need to be to solve the shortage, there has been an increase. Almost all schools of education are reporting at least anecdotally, though we do not see it in national data yet, increases in enrollments and increases in the academic ability of entering students. But the increases are smaller in the shortages areas than they are in the nonshortages areas.

It is a promising sign. It is a sign that there is something to build on. If the trends probably were up to about 135,000 or 140,000 perspective teachers being trained now, this is up from maybe 100,000 a few years ago, but we still need 200,000 a year, and by 1995, 270,000 a year. So the gap is still large, but the trends are turning.

Ms. GLENN. I hate to talk about money again, but new teachers 'salaries are being front-end loaded, so that new teachers may make $24,500, not too different from a new accountant. But a teacher has to work 20 some years to reach $40,000, where an accountant might in the next 5 or 10 years make that $40,000. So that beginning salaries are more attractive, but as people get into the profession and look at the long-term outlook, they may change their mind.

Ms. McBAY. I might just add I think that the national emphasis on restructuring schools and giving teachers more responsibility, I say that also makes it much more attractive as a career.

The CHAIRMAN. Very helpful and interesting, and we will be calling on you as we get down the road in terms of shaping the legislation. But these have been very very helpful comments.Thank you very much.

Our second panel consists of three very distinguished gentlemen in three very different walks of life. Each has a story to tell about a personal experience involving a teacher they had as a student in elementary or secondary school. I believe those stories help illus-

trate the tremendous influence teachers can have in the lives of young people.

Chief Justice Warren Burger served on the Supreme Court from 1969 to 1986. The Chief Justice is a graduate of John A. Johnson High School in St. Paul, MN.

Brian Dennehy, a well recognized actor who appeared recently in a number of films, including "Day One" about the making of the atomic bomb, "Cocoon" and "F/X." Mr. Dennehy is a graduate of—high school in Mineola, NY.

Mr. Maurice Sendak is a well renown author and illustrator of children's books, including such classics as "Where the Wild Things Are," "In the Night Kitchen" and "Outside Over There." Mr. Sendak is a graduate of Lafayette High School in New York City.

If you all would be good enough to come forward. Chief, we want to extend a very warm welcome to you as well. I think you were good enough to come up here and testify when we considered the Literacy Corps program a couple of years back. And we have been able to institutionalize that program. Now we have six of the colleges in the greater Boston area. We started off in a voluntary program which has been funded by the Boston business community. Now we have approximately 200 colleges that are going to be participating in that program from the Department of Education. And that program has been over-subscribed.

We know it is extremely rare to have a member of the Supreme Court appear and testify on legislation, and we look forward to your comments which have been very very helpful in the past. And we are delighted to hear your story, as we are those of our other very distinguished and very special guests. Chief Justice Burger, we will start with you.

STATEMENTS OF HON. WARREN BURGER, CHIEF JUSTICE OF THE UNITED STATES, RETIRED; BRIAN DENNEHY, ACTOR, SANTE FE, NM; AND MAURICE SENDAK, WRITER AND ILLUSTRATOR, RIDGEFIELD, CT

Mr. BURGER. Mr. Chairman, thank you. Good morning. You have been hearing from the experts on education and I am bound to say that I am not here as an expert. I taught in law school for a dozen years, but that is not the kind of teaching the country is having shortages on. We have an abundance of lawyers and an abundance of law teachers. In any event, I do not think that area of education is nearly as important as the kind of people you were having here this morning. That old business of as the trig is bent so goes the tree.

And I understand that you wanted some of us to relate our personal experiences in school, and I can and you will forgive me I hope for making it necessarily somewhat personal. In the last three years when you and I, Senator, have been working together as members of the Commission on the Bicentennial of the Constitution, I think I have spoken to conventions of teachers. Aggregating somewhere over 25,000 and had many many sessions with small groups of teachers about how to carry the message and the story of

the Constitution to the young people in the primary schools and in the high schools.

Somewhere along the line it appeared to me that no particular teacher that I had at the University of Minnesota and night classes where I attended or in the night law school that I attended for a period of nearly 8 years, stood out in my mind anywhere near as much as the teachers in the primary grades and in high school. Two of them in particular I will mention. And the impact that I come to not only on my own existence but a direct impact on our program, as you know for the Bicentennial.

In the grade school we had a teacher who abandoned the regular teaching at 2:30 every Friday afternoon, and we were all somewhat glad of that. Then the class became a meeting and over a period of the entire semester, each person in that class at one time or another was a chairman of that meeting and others were movers of motions and seconders and movers of substitute motions. And without knowing precisely the impact of what we were learning, we were learning about Roberts Rules of Order and procedure and civilized treatment of problems. She also had the class divided up into wards. Each ward would elect its chairman and the chairman of the wards would become the city council, the class council, and they in turn would elect a mayor. At the time I do not think we realized the value of what these teachers were doing for us.

At the high school level, one teacher, the greatest teacher I ever had, Edna Moore. The first one was Mrs. Elizabeth Gill. A teacher for 2½ years in the high school period began what at least the local newspapers reported was the first class in journalism in any high school in the country. The class published a weekly newspaper and it was printed right in the building, hand set type. Our class did not set the type, someone else did that.

I will give a specific example, two examples of what this teacher did. First in teaching the class in journalism, she published this little weekly paper about six pages tablet size. We learned that in any kind of writing it is a good idea to say what you are going to say first. That is the lead is what a newspaper reporter would call it. And someone commented to me recently in reviewing hundreds and hundreds of opinions, I have written in the Court of Appeals and in the Supreme Court, that every opinion that I have ever written begins with a lead. One journalist once said, that he liked that style that I was using, a journalist technique. The first sentence of every opinion I think I have ever written begins, "we review this case or we have granted review, or the case is here to decide," and then the question that is before the court is right in the first paragraph. I never bothered to find out what other judges and lawyers views are on this.

But impact came from this teacher of journalism. She was also the teacher of English and composition. I am speaking now of Edna Moore that I have mentioned. And I have one exhibit if you will excuse me for having something very personal. At the end of the term, I think, in the junior year of high school, she gave the students in the class the choice of writing the usual examination or writing a paper on one of several assigned subjects or doing anything else we wanted to do, to demonstrate what we may have learned in the class.

I decided to do a pictorial map. I stopped at the butcher shop on my paper route and got a long roll of butcher paper which is why it is preserved now for nearly not quite 100 years, Senator, but a long time. And I drew a map, a literary map of England. If you will allow me, I would like to have you see it. So Norman, would you hand that to the Senator, so he can look at it more closely, and the two Senators, if you will.

You will see from that map why in meetings and conferences over the years when someone among lawyers and judges would say in referring to Magna Carta, when was that in 1500 or 1400. It immediately flashed across my mind June 14, 1215, because I had drawn a picture.

The CHAIRMAN. The only difficulty I have with your map is you have a picture of St. Patrick in a boat that is sinking.

Mr. BURGER. I was not covering Ireland, Senator. I was only covering England. I also never forgot that the Norman Invasion, the Battle of Hastings was 1066, and the dates of the first—the Wycliffe Bible and the first printing press and a good many things. I did not have a close memory on every picture there. As a matter of fact, now I have some difficulty remembering a few of them. That came to my mind because the teacher in her 90's sent me the copy some years ago.

When we were reaching out deciding what we were going to do to try to touch the students in the grade schools and the high schools of this country which is the main objective of the whole Bicentennial program, it occurred to me to try to have a historical, pictorial map contest for the students. Then I believe temporarily at least, three other maps in the contest which took place last year and will be repeated again this year, in the 1st, 5th and 6th grades, we had the contest where the entire class would participate—25 or 30 students. That would be repeated in a separate contest for the 7th, 8th, and 9th grades, and then at the high school level, the individual students could enter just I did individually back so many years ago.

Now I come to what was the impact of this teacher? She enabled me to remember the date of Magna Carta and a great many other events of history. She sharpened my interest in history that undoubtedly had an influence on my studying law. Beyond that because of what she did, a map contest like it has reached hundreds of thousands of students in this country. We are not sure how many. There were 163 maps in the finals and we had a committee of historians and journalists and teachers doing the judging.

And if you have time to look at those other maps, I think you will be fascinated as we were that 4th, 5th and 6th grade kids could take this blank map which we furnished and draw pictures to illustrate the Boston Tea Party, the Surrender of Cornwallis, the Constitution of Convention, and other great events. And then the 7th, 8th and 9th did the same thing. I particularly urge you to look at the map done by the individual student, a girl from Pakistan who had immigrated to this country. Those young people, the hundreds of thousands that were exposed to it in the classes will never forget some of these important factors of history and geography.

And here we are indebted to the National Geographic Society. As you know, they have a $40 million program for education on geog-

raphy. National Geographic furnished these blank maps. But the students had to put in the name of the State and describe the events.

The impact of these two teachers, and I understand the other witnesses here today will relate some of their own experiences, the impact of these two teachers was more than just on the students in that classroom, it was on children several generations removed, down the road.

One more thought, as you know, Senator Kennedy, last year our Commission made grants of $3½ million to seminars for teachers of primary schools and high schools in effect to teach the teachers the story of the Constitution, so that they could carry it to their students. We have done the same each of the three years we have been in existence and will continue that again next year. That is the largest single amount of money out of our appropriation, and I must say in closing that I have been enormously impressed with the enthusiasm of the teachers. They have wanted these seminars. They have given us the maximum cooperation in all of the programs we have had. And I think their enthusiasm has increased year by year.

That pretty well covers what I had in mind, Senator.

The CHAIRMAN. That is an enormously interesting story and it certainly is an inspirational one as well, and we are very glad to receive it. Brian Dennehy, would you like to go next?

Mr. DENNEHY. Mr. Chairman, thank you very much for inviting me here to be with these very distinguished people. Senator, I am reminded of a passage in Robert Bolt's wonderful play, "A Man for All Seasons" in which the hero Thomas Moore is approached by one of his students, Richard Rush, and Rush asked of the great man, what is your advice about my career? What should I do with my life, now that I have this extraordinary education? Moore says be a teacher Rush, a great profession, an honorable profession. I think you could be a good teacher, perhaps a great one. Rush's response—he is a very ambitious young man—is, and if I am a great teacher, who will know it? So Thomas Moore says, you will know it, your students will know, posterity may know it, and God will know it. Not a bad audience that. Rush, of course, does not become a teacher. In fact, he becomes a politician under Secretary for Wales, I believe. So for the sake of Bolt's drama, another great teacher was lost to the world.

Obviously things have not changed so much in 400 years. In my own personal story in 1952, I was 13 years old and I had already qualified as a juvenile delinquent and was working hard on becoming an adolescent delinquent. I was a freshman in high school. I had the very good fortune of meeting a young man named Chris Sweeney. He was a Korean Vet, Fordham graduate, and an extraordinary football player at Fordham which was very important to me. He was also the miracle of miracles, an actor. Kind of an unusual combination, especially for 1952.

In the next 2 years, Chris performed a miracle on me and on many others like me. He was a great teacher. He taught history. He was an inspiration and interesting. He was a wonderful football player, and as I said before he was a terrific actor. He was the only

guy I know who could quote Shakespeare while he was knocking you down repeatedly on the field and not lose the rhythm either.

Most importantly for me and perhaps for the testimony here is that he did something that had never been done for me before which is he showed me that there were options in life. There were all kinds of possibilities I had never considered, all kinds of directions and roads, adventures. Without Chris, I am convinced that I never would have become an actor. I never would have found the thing that has been the most important thing in my life.

He performed that most critical of functions at that age. He opened the door. Teachers are the most important people that we can possibly imagine. And we have for some unaccountable reason in this country ignored them, underpaid them, abused them, and we lose them all the time.

The other side of that tragedy or that wonderful story that inspirational story that became a tragedy is that Chris left teaching. He could not support his family. He was an extraordinary man and there were other people out there who knew that too, and he went to Wall Street. How many other lives could he have affected, could he have changed, could he have just not improved, and not just taught, but inspired and changed as he did mine.

So I am here to speak in support of these bills and I hope that there are a lot more like them. And I will be here to support those too. Thank you

The CHAIRMAN. Thank you very much. We particularly appreciate your making very serious changes in your own schedule and be able to make those comments, as a further indication of your deep commitment to this. So we are very grateful to you.

Mr. Sendak, we look forward to hearing from you.

Mr. SENDAK. Thank you. First, being a writer, I want to apologize for these hasty, unedited and maybe slightly incoherent notes. I did very badly in school and this setup reminds me of school, I am afraid. Sort of like here to take my regions exam and I know I am going to fail. I do not have alas as positive a story as these gentlemen about school, but I have written some notes so let me tell you. This is also, as the Honorable Warren Burger said, very personal, but it has to be in order to recreate what that felt like.

From the very beginning school was a disaster. I was a frightened kid who would spend almost all of his early childhood sick in bed with the usual 1930's terminal diseases. School was viewed as a punishment or a banishment. In order to overcome the emotional handicap of shyness, timidity, and fear of all new experience, I needed the strong support of the school teacher. This was not forthcoming. In all truth, there may have been some few teachers who did extend a helping hand, but they were certainly in the minority back then and I do not recollect them.

Generally my timidity was viewed as a defect and treated accordingly—harshly, mockingly, fiercely. What began then as a psychological problem, finally developed into a physical one. I was diagnosed with heavy possible stomach disorder. Of course I was a bad student in all of this time. My brain somehow became tied up with my stomach—cramps and various pains suited me just fine because it meant I could stay home. I stayed home quite frequently.

Now let me give you a portrait of a fairly typical type of teacher who might stand as a prototype for all of the rest. We are now talking 3rd and 4th grade, this is the early 1930's. I will describe a Mrs. Eisenhower, no relation I assure you. She was my art teacher in the 3rd and 4th grade. The irony, of course, is that being art, you would think I would take to it as a refuge or a happy haven. Not so, thanks to Mrs. Eisenhower. I can recollect her stern, broad, angry face and her immense rigid body. She radiated rage and impatience and even a kind of barely concealed madness. In a loud vibrating voice she would order us row by row, kid by kid to collect our little pots of paint from the back of the room. When the harsh voice came to me, I invariably in Pavlov dog fashion vomited. The vomiting I quickly learned was a terrific weapon, a disgusting one certainly, but a very effective one. I got to go home even more frequently.

Now it was not until years later in high school that I found or more to the point acknowledged there existed two extremely sympathetic teachers. They probably changed the course of my school life. It was far too late for them, I believe, for a major change of character or stomach. But there was a much beloved Mrs. Grace Warshaw, my English teacher. Somehow intuitive, my complicated problems, she battered through my suspicious defenses and shyness, led me into literature and life via Shakespeare. I illustrated MacBeth just for her and as of 2 years ago, she still possessed those clumsy water colors.

There was Mr. John Eustis, my art teacher, the last year of high school at Lafayette in Brooklyn—genial, gentle, amazingly understanding man. He turned me into a dedicated artist. But some damage was done, I refused to go to college. I was eager to get out into the world, eager to work, and get back to solitude again, just as I had as a child. And it is sad to me that there is only the memory of these two people, but it was such a profound memory. The good they did was so amazing. I cannot imagine having survived those last years of high school without them. They asked nothing for themselves, that was the astonishing thing.

That is really all I have to say.

The CHAIRMAN. Very varied experiences that all of you had. Let me ask you, did any of you ever think about teaching, going into teaching?

Mr. BURGER. Not into teaching of the kind that is really important that we are dealing with today. But I did go into law school teaching the year that I graduated from law school which was much too soon to be doing it without more practical experience. But my wife went into teaching and taught first in high school and then preferred teaching in primary school, and taught in the primary schools until we were married. A good of my reactions about this problem that you are dealing with now is really an echo of the things that she and I had talked about over the years. She would like to have stayed in teaching, but with the combination of circumstances prohibited it.

If I may intrude one more thought that Mr. Sendak's comments made. You will recall, Senator, that the Franklin Mint reproduced the head of Ben Franklin which I made, I think about the same time as this map that I handed out. The art teacher was pressing

me to go into that field so much. But you recall that the Bicentennial Commission profited by $50,000 because that little head of Ben Franklin about 8 or 9 inches high made in 1924 or 1925, I think, was the subject of an offer to me from the Franklin Mint to sell it for $50,000, and I responded by saying that they would not pay me $50, if it were not for the office I held. They conceded that that had something to do with it.

Then when I became chairman of the Commission, I gave this Franklin bust to the Commission and the Commission sold it to Franklin Mint for $50,000 down and a percentage of the sales. That was another impact. It was not just on me in 1924–25, but it had a continuing impact and a good many thousands of those busts of Ben Franklin are around the United States, including one on the desk of Margaret Thatcher, one on the desk of President Mitterand, one on the desk of President Reagan, and soon one to be on the desk of President Bush, if you will keep that a secret.

Mr. DENNEHY. I had not thought about teaching. Again, actors are very strange people. I mean they are absolutely driven as I was by the need to express whatever it is I have been trying to express for those last 25 years. It is funny I have been thinking about this testimony for the last few days and it is something that I have been thinking about in the last few years. I think that there are a lot of people like me at my age, having achieved some kind of success who might like to think about getting into teaching now. I think I could make a difference in some people's lives as Chris made in mine.

You get to a certain point in your life and you get the feeling that you kind of like to pass it on. It is something I would like to seriously think about. It is something that has occurred to me. It is something that I feel very strongly about recently, especially in the context of the crisis that we find ourselves in. Unfortunately, I certainly would not be able to do anything in math or science, but it is something that I would like to think about and it may be something that the Federal Government might think in terms of encouraging, not in any financial terms, but in terms of just sponsorship.

Mr. SENDAK. This might sound like a contradiction based on what I said earlier, but I am a teacher. I am not teaching at this very moment, but I give a workshop in New York City and I have taught at Yale for about 8 years, and I give a master class for young artists in writing and illustrating, and I love it because I know how tender they are generally speaking, and how frightened they are about just before going into the world, having a career and making a living. So I try to be as best I can the unegotistic, uncrazy teacher I wished I had had when I was a young man. You cannot teach artists, you can only hold their hands and pat their heads. And if they are very gifted, they go off and do what they have to do anyway.

So it has been a great pleasure for me to teach. It is wonderful to have some of my students now in the profession writing and illustrating or designing and to watch their careers. I do not have children, so these become my kids and I become papa to a lot of nice people working in the world.

Senator KASSEBAUM. I was just going to comment that in many ways all three of you are teachers, whether professionally recognized or not. Because, Mr. Sendak, for instance I read your books to my children. They in turn are going to continue to read your books to their children, and I got as much pleasure out of reading them. I still read your books. I still love to send "Where the Wild Things Are" as a gift to a young child. They appeal across generations. So that in and of itself, you impart something special.

And I would just say, Mr. Chief Justice, I think I will take up map drawing tomorrow, if it could just give me a fraction of the intellectual memory and curiosity that it has achieved for you and for the students who participated in that. I share National Geographic's enthusiasm and concern that we do not study geography and know it as we should in this country. And the work that you have done with the Bicentennial Commission in that regard, I think, is wonderful and has had an impact on a number of students.

And I would just hope Mr. Dennehy that maybe you could be commencement speaker many times over. You could certainly convince me to go into teaching, if I was a senior in high school wondering what to do. I think it does have an impact sometimes in ways that we do not fully realize, and part of it is an inspiration of someone that one has met. When you mention thinking about going back, that is part of the alternative certification that I am sure one has to think about it carefully. It is drawing people like yourself, Senator Kennedy or myself, perhaps back into teaching. I do not know if you would want to teach in the classroom or not?

But that is what I think has some advantages in alternative certification where if you have not gone the regular route, that there can be some avenues back into the classroom. I think it has much merit. I also think I would have to go back to school in order to be able to go back to teach. So much is demanded today that I think that there are interesting experiments being done on how to get people back in, and part of it is just parents who are going back in to assist in classrooms which I think is important. Thank you.

The CHAIRMAN. Thank you, Nancy.

Senator KASSEMBAUM. It has been a very interesting testimony.

The CHAIRMAN. A lot of Republicans up in Massachusetts wish I would go into teaching. I want to thank all of you. I do not think any of us knew quite what to expect from this panel, but all of you had such enormously interesting, inspirational stories. It is very good that we have them, and we are grateful to all of you for sharing those with us here in the committee.

We will stand at recess.

[Whereupon, at 11:50 a.m., the Committee adjourned, subject to the call of the Chair.]

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